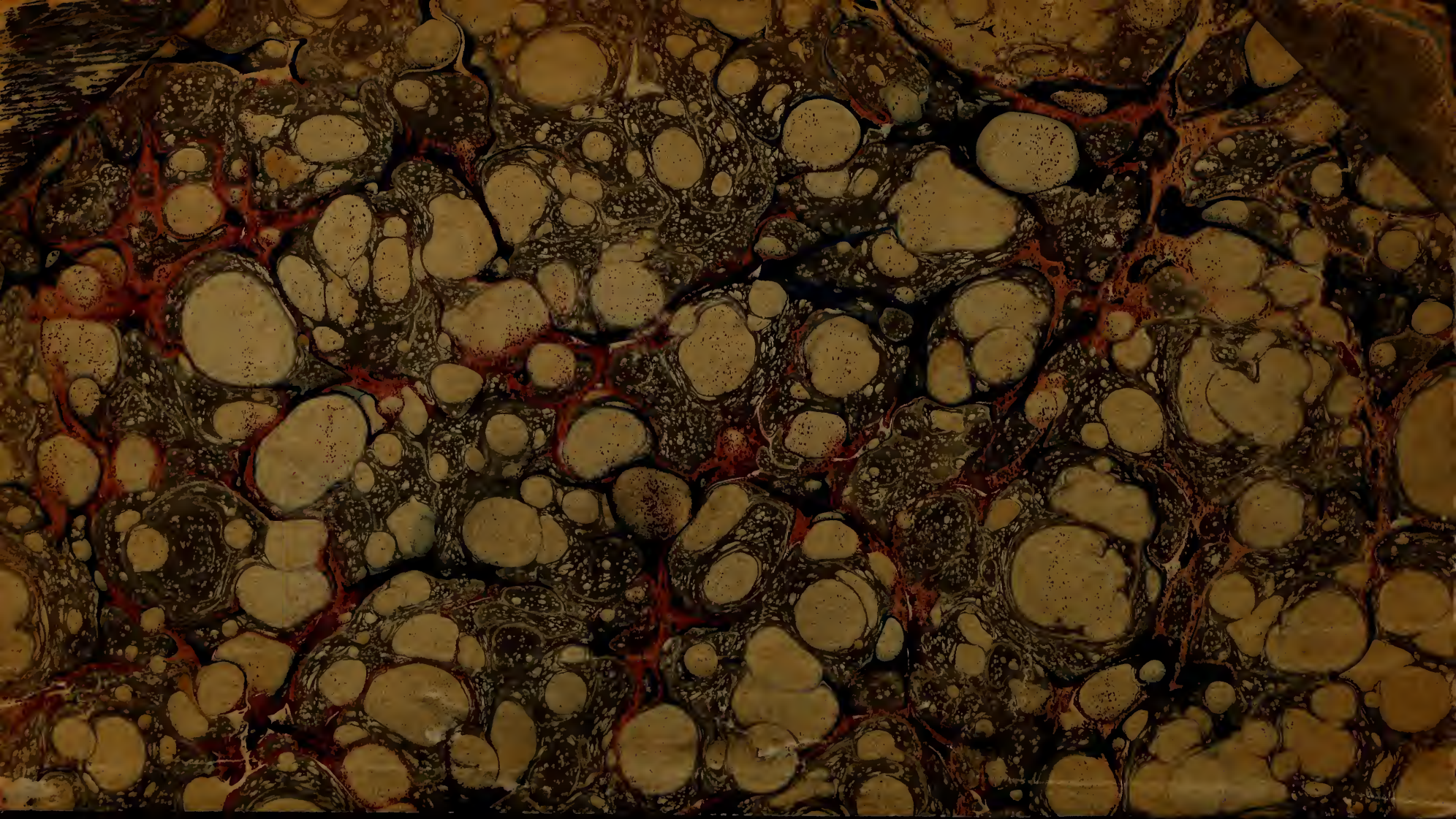

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A

TREATISE

ON THE

VARIETIES AND CONSEQUENCES

OF

OPHTHALMIA.

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TREATISE

ON THE

VARIETIES AND CONSEQUENCES

OF

OPHTHALMIA.

WITH A

PRELIMINARY INQUIRY

INTO ITS

CONTAGIOUS NATURE.

BY

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TO THE

HONOURABLE

HENRY EDWARD FOX,

COMMANDER IN CHIEF OF THE FORCES IN THE MEDITERRANEAN, LIEUTENANT GOVERNOR OF GIBRALTAR, &c. &c. &c.

SIR,

ALTHOUGH your public talents and private virtues must bespeak attention to any work which is honoured with so distinguished a patronage, yet in offering this address, I am influenced by other motives. It is, perhaps, the only public opportunity I may ever have of testifying my gratitude for many instances of personal favour shewn me, and for the warm interest you have been pleased, at all times, to express for my welfare. With every sentiment of respect, I remain,

SIR,

Your most obedient

humble servant,

ARTHUR EDMONDSTON.

PREFACE.

IN May 1802, I published a pamphlet, entitled, "An Account of an Ophthalmia which appeared in the Second Regiment of Argyleshire Fencibles, in the months of February, March, and April 1802; with some Observations on the Egyptian Ophthalmia."——The objects of this small work were to communicate some facts which appeared to me to prove the contagious nature of Ophthalmia, and to state some observations respecting the Ophthalmia of Egypt, at that time scarcely known in this country. It was reveiwed in the different journals. Some were favourable to my views, while others considered that the facts stated were too few to justify the conclusions which I had drawn from them; but from all it met with candid criticism.

FEELING an interest in an opinion, which I considered in some degree peculiar, I spared no pains in examining every fact which appeared to me,

either to support, or to militate against it; and the Preliminary Inquiry contains the result of my investigations. Although far from pretending to have been the first who suggested that Ophthalmia is propagated by contagion, I trust, without incurring the charge of presumption, I may venture to claim the merit of having been the first who, by a copious detail of unquestionable facts, first endeavoured to demonstrate the truth of that opinion.

While engaged in this pursuit I had numerous opportunities of enlarging my knowledge of the disease itself. Ocular inflammation is a subject which has long occupied my thoughts, and although it has engaged the attention of some eminent writers, I hope my views of its nature and treatment will not be found to have been materially anticipated by any of them. Having seen Ophthalmia under every variety of aspect, and having taken my details of its phenomena exclusively from nature, I can speak with confidence of the progress of its symptoms, and of the means which I recommend for their removal.

The arrangement which I have adopted is the one which appeared to me to be the most simple and systematic. I have divided Ophthalmia into Idiopathic and Symptomatic. Under the first head I have arranged those varieties of the disease which, appearing to be influenced by no particular cause, were justly entitled to be considered as primary affections. Under the latter head I have stated those modifications of Ophthalmia which seem to depend, in a great measure, on the presence of some more general disease of the system.

It is an obvious result however, of this division, that although I may be correct in my limitations with respect to Idiopathic Ophthalmia; it is very difficult to fix the boundary of the agency of other diseases. To remedy this defect, and to avoid minute subdivision, I have in the chapter on the causes of Ophthalmia endeavoured to appreciate the importance of each; and where any appeared to give a character to the affection I have examined it at length, so that before entering upon the consideration of the general treatment, every modification of the disease has been carefully investigated.

In compliance with a common practice, I at one time thought of accompanying the history of the symptoms with drawings illustrative of the changes which the parts undergo during the progress of inflammation; but long experience had convinced me of the impossibility of conveying by any such representations, just notions of the ever varying states of actual disease. To those who are familiar with morbid appearances, such illustrations are altogether unnecessary; and to such as are not conversant with disease, they frequently convey erroneous conceptions.

I have also declined to give this treatise the customary support of a list of appropriate cases; for having stated minutely both the phenomena and treatment of Ophthalmia, I thought it could neither be interesting nor useful to distract the reader with partial details.

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ERRATA.

Page	*Line*	
43,	4,	(Note), for *operation*, read *operations*.
44,	3,	(Note), for *quantities*, read *qualities*.
48,	2,	for *was*, read *were*.
75,	18,	for *asortantur*, read *asportantur*.
77,	16,	for *repandre*, read *repandu*.
84,	24,	for *parté*, read *parlé*.
176,	6,	for *appears*, read *appear*.

A

TREATISE

ON

OPHTHALMIA.

PRELIMINARY INQUIRY INTO THE CONTAGIOUS NATURE OF OPHTHALMIA.

PART I.

ALTHOUGH different authors have conjectured that Ophthalmia, on some occasions, appears to be contagious, yet such an opinion has not hitherto been the object of a separate investigation; and in general, the ideas of those to whom the probability of such an occurrence seems to have suggested itself, are so vague and so interwoven with other speculations, that it is often extremely difficult to ascertain their real views. Some whom

the indefatigable industry of Plouquet * has discovered to be favourable to this doctrine, are still, to use the words of an elegant writer, *aut raro evolvuntur aut in caligantibus bibliothecis reposti duro somno damnantur;* and on examining others referred to by the same author, I have found, that in their attempts to explain the sudden appearance of Ophthalmia, they have obviously ascribed its production to the agency of a different principle. The sketch therefore which I now propose to give of the ideas which have been entertained on this subject, although embracing a wide range, will include comparatively but a small number of names; but, at last, I shall omit none who have adduced any remarkable facts in support of the opinion.

One of the earliest and most authentic advocates for the opinion, that Ophthalmia is a contagious disease, is Aristotle. In the seventh section of his Problems we meet with observations to the following purport:—How comes it that those who approach individuals labouring under consumption, sore eyes, and cuticular eruptions, are themselves affected in a similar manner: but that neither

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* Initia Bibliothicæ medico-practicæ et Chirurgicæ realis.

dropsy, fever, apoplexy, nor any of the various other diseases are communicated in this way? In the case of sore eyes, does it arise from the circumstance, that as the eye is by far the most irritable part of our frame, and is so easily affected by whatever acts upon it, that it may assimilate itself to, or imitate the motion of the object which happens to be the subject of its contemplation: and thus when one person gazes on the eye of another labouring under Ophthalmia, the former is also seized with it. Such a case, however, becomes a source of contagion, since it corrupts the air, and renders it pestilential *.

Here our author appears to entertain no doubt respecting the contagious nature of consumption, the itch, or morbid affections of the eyes. The only difficulty seems to be to explain the mode in which these contagions operate, and his conjectures respecting Ophthalmia are curious and interesting. But this very attempt at illustration has, in a great measure, weakened the force of the opinion, by confounding the idea of contagion with the power of imitation; and that discrimination may be

* Ed. folio, tom. iv. p. 717.

fairly questioned which excludes the class of fevers from the list of contagious diseases, and considers consumption as a principal one.

The circumstance perhaps of Aristotle not having been a practical physician, and his mentioning the opinion rather in a casual manner, may account for the limited number of converts to the doctrine, and the disregard into which it gradually fell.

Ovid has been quoted by some, as an authority for the contagious nature of Ophthalmia. The words

Dum spectant oculi læsos læduntur et ipsi *,

have been considered as expressive of this opinion. A perusal, however, of the passage connected with this expression will shew that the loose analogy of the amatory poet had a very different object in view from that of establishing the medical operation of contagion.

Plutarch, in his *Symposiacon*, expresses himself to the following effect:—As we observe in other

* Remedia amoris, ed Q. line 615.

diseases, so is the case with the contagion of sore eyes, by which a great many are affected at the same time; so irresistible is the force of mutually affecting one another *. The object of Plutarch, by this illustration, was to prove more forcibly the power and influence of sympathy, the subject under consideration; and if we conceive that he meant the actual emission of a morbific matter from one individual to another, we impose a meaning on his words which the author himself never intended they should convey, and destroy altogether the force of his own illustration.

Galen, the cotemporary of Plutarch, in stating the diversity of causes which modify the type of fevers, introduces an observation which seems to shew that he conceived Ophthalmia might be propagated by contagion. His words are—"Et quidem quod aëris pestilens status febrem afferre consuevit, nemo sanæ mentis dubitavit sicuti ut pestilenti morbo laborantium conversatio periculosa, ne inde contagium contrahatur quem admodum ex scabie et lippitudine †."

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* Vol. viii. lib. v. parag. 711 & 712.

† De differentiis febrium, lib. 1. cap 2.

In this paragraph the words themselves express a firm belief in the contagious nature of Ophthalmia. But the ancients frequently employ the word contagion as synonymous with sympathy or imagination; and, from a comparison with cotemporary authors, I find the latter to be the more general acceptation. In the medical discussions of modern times contagion has a much more restricted meaning.

The following passage occurs in the *Acta Naturæ Curiosorum* * :—" Lippitudinem solo intuitu contrahi posse scripsit Bapt. Codronchius *de morb. venef. lib.* 2. *cap.* 2, quod idem ego (Lanzoni) pluries observavi, et præsertim, Anno 1722, dum maligna quædam influentia Ophthalmiarum hic Ferrariæ oborta fuit, ita ex uno tantum, qui lippitudine laboraret, ejus tota familia brevi Ophthalmica facta fuerit, imo non tantum familiares et cives, sed extraneos etiam ac hospites affecerat, ut perigrinos, per solam noctem in hospitio morantes sæpe invaserit et qui sanus venerat, lippus decesserit." The first part of this observation, although it states the belief of the author, that Ophthalmia may be con-

* Vol. 1. obs. 41. Auctore Dn. D. Josephi Lanzoni.

tracted by the simple inspection of the eyes of persons labouring under it, yet it by no means specifies his peculiar ideas of the mode in which this is effected. But the Ophthalmia which prevailed at Ferrara, and which fell under the immediate observation of Lanzoni himself, can scarcely be explained without admitting the operation of a contagious principle, or the presence of an epidemic of singular malignity.

Nicolaus Massa, in his work *de Peste*, when attempting to explain the probable mode in which contagion operates, illustrates his opinion, by adducing the instance of Ophthalmia. His words are, "Idem venit in Ophthalmia, quod, qui in oculos ita affectos intueantur, in eandem incidunt ægritudinem, et hoc propter dispositionem membri ad suscipendum apti, et vapores alterantes aërem in oculis mox surripientibus receptum neque enim omnes inficiuntur, sed tantum qui sunt dispositi *."

This author, however, hastily assumes as established an opinion, by no means current in his time, without detailing the facts upon which that opinion is founded. Besides, considering inspec-

* Lib. contract. cap. ii. page 8.

tion of the eye as a necessary preliminary in the propagation of Ophthalmia, and restricting its operation to such individuals only as are susceptible of it, he has in some measure invalidated the force of his conclusion.

Boerhaave has been quoted, as an authority in support of the contagious nature of Ophthalmia; and in his work on the diseases of the nerves he has the following passage:—"Si quis subito videat hominem cujus limbi palpebrarum sunt inflammati, coccineo colore fulgentes, et oculi simul tales sunt, et lachrymæ inde destillant, ejus oculi etiam inde lædentur nec ullus est qui hoc sentiat *." But it should be recollected that the author is endeavouring to demonstrate the power of sympathy; and that although he states, that Ophthalmia may be contracted by the simple inspection of the eyes of a person labouring under it, yet his object is to shew that such an effect is the result of a sympathetic action.

Dr James Armstrong, in his thesis, *de tuenda nautarum sanitate*, printed at Edinburgh in 1789,

* Vol. ii. de Sympathia, p. 512.

details an instance of a violent Ophthalmia, which broke out in his Majesty's ship Albemarle, apparently in consequence of having impressed three seamen out of a slave ship, which she fell in with on the coast of Hispaniola; both seamen and slaves on board of which at that time were affected with the disease. The three impressed seamen were convalescent at the time of being taken into the Albemarle. The disease spread rapidly to the crew of the latter, and was at last checked by a careful separation of the sound from the sick. I shall give the account in the author's own words. The passage is indeed rather long, but the statement is so perspicuous and conclusive that it would be injustice to abridge it. "Mense Januario 1782, regia navis Alba Marla, oram Hispaniolæ legens, navi servis onustæ obviam venit, unde tres nautas in se conscendere coegit. Unusquisque ex tribus, oculis leviter tum inflammatis laborabat, et, causam hujus affectus rogati, dicebant, se eo tempore ex dolentissimo convalescere morbo, quo omnes fere homines servifera in nave tum laborabant, et ne unum quidem præter dominum ipsum navis vim ejus effugisse. Quartum vero post diem quam in navem regiam allati fuerant, duo ex nautis qui semper in hac nave fuissent, mane querebantur,

sese proxima nocte acuto dolere in anteriore parte capitis correptos fuisse, et eodem tempore, molesto oculorum, haud secus ac si iis pulvis inspersus fuisset, sensu affectos. Postero manè, alii complures sese priore nocte correptos eodem modo et iisdem malis fuisse aiebant et septimi mane diei ex quo tempore primi duo affecti fuerant, viginti duo ad usitata munera præstanda ineptos hicce morbus jam reddiderat. Nonnulli propter dolorem capitis acutum, lecto affigebantur neque caput ex pulvino levare poterant, et inflammatio eò invaluerat, ut oculorum color carnem crudam quam maxime referret. Morbo tam cito in dies ingravescente, ne latius pateret, præfecto navis ægrotos omni cum sanis commercio interdicere necessarium visum est. Qua re facta, contagio non amplius viginti quinque affecit, et post quinque circiter hebdomadas quam primum, in navem advecta fuisset omnino evanuit."

But this history, so accurate and circumstantial, seems to have been in a great measure overlooked or forgotten, which perhaps may be accounted for from the circumstance of its having appeared in a dead language, and through the medium of an inaugural dissertation, a species of publication which has too often but an ephemeral existence. Nothing, however, can lessen the value of the facts

which it records. The only circumstances tending to weaken its influence, in support of the contagious nature of Ophthalmia, are the circumscribed scene of its operation, and the speedy and total destruction of this supposed contagious principle.—In both these respects it differs essentially from other instances of a similar nature, hereafter to be stated.

It would be altogether superfluous to multiply the number of detached instances where Ophthalmia has appeared to be contagious, since none of them have been deemed adequate to demonstrate satisfactorily the truth of such an opinion. I have mentioned the most striking; and even these have had their decided opponents, and have possessed but a short and limited influence over the minds of medical practitioners. For, in establishing any particular doctrine in medicine, it is not the conjectures of any individual, however eminent, nor the detail of insulated facts, however numerous, nor both conjoined, that form the foundation of a true system; but a series of events connected among themselves, operating with uniformity, and as far as can be traced mutually depending upon each other, that should constitute its basis

Scarcely has a modern systematic writer given this opinion a place in his work, but has rejected the idea as improbable. Since the Ophthalmia of Egypt, however, became the object of general observation, several medical men have been induced to change their views of the subject; and begin to believe that a disease which has hitherto been considered as purely local, is often propagated by contagion.

PART II.

HAVING stated the views of different authors respecting the contagious nature of Ophthalmia, I shall now detail those facts which have occurred to myself in support of that opinion, and state the inferences which appear to be deducible from them. With this view, I shall, in this second part of the Inquiry, give a history of the Ophthalmia which appeared in the second regiment of Argyleshire Fencibles, in the months of February, March, and April, 1802 *.

The second regiment of Argyleshire Fencibles embarked, in a healthy state, the 29th of January, 1802, at Gibraltar, on board the Delft troop ship of

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* This is the historical part of the pamphlet alluded to in the preface, and which was published in May following. The detail of the symptoms which characterized it, and the definition of Ophthalmia, shall be considered at length in another part of the work. At present it is necessary, merely to observe that Ophthalmia consists in an inflamed state of the tunica conjunctia and membrane of the eye-lids.

sixty-eight guns. The Delft had been employed in the Egyptian expedition under Sir Ralph Abercromby, and was considered an unhealthy ship both on her passage to Egypt, and on her return from it. She brought down to Gibraltar a part of the Guards, who, on their arrival there, were put on board of other ships, on account of the sickly state of the Delft. The prevailing diseases were fever and Ophthalmia. During the time the Delft remained at Gibraltar, a period of two months, she was frequently washed and fumigated, and every means employed that could render her fit for the reception of troops; so that at the embarkation of the Argyleshire regiment, with the exception of one of the lieutenants of the ship, who had lost the sight of an eye in Egypt from Ophthalmia, and at that time laboured under the disease, both the officers and men might be considered in a state of perfect health.

The bedding delivered out to the Argyleshire was new, but the hammocks in which they lay, except a few appropriated for the use of the sick, had all been occupied by the Guards.

The ship sailed two days after the embarkation

of the regiment; and, after an agreeable passage of twenty-one days, arrived at Spithead on the 21st of February following. She was then put under quarantine, and the regiment did not disembark until the 28th, when it marched to Hilsea barracks.

One case of Ophthalmia occurred ten days, and six other cases seven days before the landing of the regiment. The patients could assign no evident cause for the attacks. The invasion was sudden, and the progress of the inflammation rapid. A few slight cases of fever also made their appearance.

The men were very much crowded, and, from the want of attention in caulking the gun-ports of the ship, the water came freely in at times upon the lower deck where they lay, which, notwithstanding every effort to keep it dry, was frequently wet. It may be worth while to mention, that in two companies stationed in the centre of the ship where the water had the freest access, the disease which afterwards broke out, although it did not occur in the first instance, yet was immediately afterwards more rapid in its progress, and more widely ex-

tended in one of them, than it was in any other company in the regiment; while, in the other opposite to it, and placed under similar circumstances, nothing particular occurred.

The regiment remained at Hilsea ten days, and during that period, twenty-one new cases appeared. The symptoms were the same as in those that had occurred on board of the ship. At that time an order was received to proceed to Colchester, a distance of about one hundred and twenty miles; which journey was accomplished in eleven days. The regiment marched in three divisions. I was attached to the first division, and the assistant surgeon, Mr Westbury, to the last division, dividing the sick between us. Four new cases only occurred on the road, and these in the last division; and Mr Westbury, on whose accuracy I could rely, informed me that the symptoms were comparatively mild, and that those which he had brought from Hilsea had perfectly recovered. This coincided with what had occurred in my division.

Three days after our arrival at Colchester, the disease recurred, and with increased violence.—Persons in the most perfect health were suddenly

seized with the sensation of a foreign body in the eye, accompanied with a troublesome sense of itching. In a few hours thereafter, the eye and eye-lids were suffused with blood, and a watery and sometimes puriform discharge took place; and in the severer instances, a general febrile diathesis prevailed. Where the disease had not been attended to, in its early stages, or neglected from inattention on the part of the patient, the acute inflammation pretty constantly subsided of itself on the third day from its commencement.

The simple inspection of the eye of a person labouring under the disease, seemed as if sufficient to produce it in another. Several curious and unequivocal instances of this kind occurred. One in particular deserves to be mentioned. Two serjeants came one day to the hospital together, complaining of sore eyes. One of them had been affected three hours before he made any application; and one hour before presenting himself at the hospital, he had requested his friend to look at his eye. The other complied, and declared to me, that while looking at the eye of his comrade, he felt a pain in his own. Although only one hour had elapsed from the time of the first uneasy sensation, the tu-

nica adnata was covered with blood, and the watery effusion had taken place.

Men in perfect health sleeping in the same bed, or even in the same room with those under the influence of the disease, were generally affected in a similar manner next morning; and in those cases the pulse was accelerated, and the patient complained of head-ach and restlessness.

At Colchester the sick were provided with an excellent hospital, and every necessary accommodation was procured. Seventy-five cases occurred while there; and when the disease was beginning to abate, a fresh order was received for the regiment to march to Norman Cross, about seventy miles distant. The arrangements respecting the march were nearly the same as before; and altho' several of the men had their eyes in a weak irritable state, none were left behind. They were all provided with green shades to their caps, which completely protected the eye from the sun's rays; and each man was furnished with a portion of the acetite of lead, and directed how to apply it.

On the first and second days of the journey, all

the affected complained that their eyes grew worse; but on the third and remaining days of the march, the whole, without any exception, began to get better. Twelve new cases occurred on the road, but the individuals were affected in so slight a degree, that several of them recovered without the aid of any remedy.

The Middlesex Militia lay at Colchester the same time with the Argyleshire regiment, and both left the barracks on the same day. As they marched out, I observed one of their soldiers nearly blind, Both eyes were greatly inflamed, and swelled in a prodigious degree. He told me that three days before, his eyes became suddenly sore, and that on looking into a glass, he was astonished to see them covered with blood. On my enquiring whether he could assign any cause for his complaint, he said that he could not, but supposed it to be the same as the Argyleshire laboured under; and added, that a comrade of his had been affected in a similar manner, though not in so severe a degree. The appearance of the eyes of this man was exactly the same as in the other cases which had fallen under my observation; but I have never been able

to learn the event of his case, or whether the disease was extended to others.

For a long time none of the officers, except myself, were seized with the Ophthalmia; for I impressed early upon their minds an idea of its infectious nature, and they carefully guarded against any intercourse that might have produced it. But after the arrival of the regiment at Norman Cross, and on the march to Scotland, when they became less attentive to the means of prevention, they suffered like the rest. The circumstances attending my attack were curious. Medical men, from their hourly communication with every variety of disease, seem to acquire a kind of incapability of being affected by any; but if they intermit their professional labours for a time, they are equally liable with others. I happened to be absent from the regiment a few days when the disease was at its height. On my return, I was anxious to see the changes which the different cases had undergone, and was, perhaps, too minute in my examinations. That very same day I felt the sensation of a foreign body in the eye, the tunica adnata was inflamed, and a discharge of a watery fluid took place. But the assistant surgeon, who remained with the regi-

ment during the whole of the time, escaped entirely. Subjoined is a table, shewing the daily progress of this Ophthalmia since leaving Gibraltar, with the dates and places of attack. The number of instances in it might have been doubled, as many new ones occurred after the publication of this history. But about that time instructions were received to permit as many of the soldiers as chose to volunteer into the regiments of the line. Frequent intoxication ensued in consequence of this order, and the daily sick reports were very irregularly collected; so that as perfect accuracy could not be obtained, I have declined attempting to introduce them in their regular order of succession; and shall therefore content myself with simply repeating the table as it formerly stood.

TABLE,

Shewing the daily progress of the OPHTHALMIA, since leaving Gibraltar, with the dates and the places of attack.

The Number of Cases.	On Board the Delft.	At Hilsea.	March to Colchester.	At Colchester.	On the March to N. Cross.	At Norman Cross.	Total.
1802.							Brought over
Feb. 18	1						1
22	3						3
24	2						2
25	1						1
27	2						2
March 3		4					4
4		2					2
5		4					4
6		5					5
7		3					3
8		3					3
14			1				1
16			1				1
18			2				2
23				2			2
24				4			4
26				6			6
27				1			1
28				6			6
29				7			7
30				5			5
31				4			4
	9	21	4	35			69

	On Board the Delft.	At Hilsea.	March to Colchester.	At Colchester.	On the March to N. Cross.	At Norman Cross.	Total.
Brought over	9	21	4	35			69
April 1				5			5
2				4			4
3				4			4
4				6			6
5				3			3
6				5			5
7				2			2
8				2			2
9				4			4
10				3			3
11				2			2
13					1		1
14					2		2
15					4		4
16					1		1
20					4		4
21						2	2
22						2	2
23						2	2
24						6	6
	9	21	4	75	12	12	133

Soon after the arrival of the regiment at Norman Cross, the energy of the cause producing the disease sensibly diminished. New cases occurred daily, but the inflammation was in general less violent at its commencement, less rapid in its progress, and the cure was more easily effected; although, occasionally, it appeared under very aggravated forms. It still however seemed to extend itself. The forty-ninth Regiment of Foot lay at Norman Cross a part of the time that the Argyleshire was there; and some soldiers of the latter, labouring under Ophthalmia, inlisted into it; and I had an opportunity of seeing several individuals of the forty-ninth regiment affected in a similar manner, before it left Norman Cross.

On the 22d of May, peace having been signed with France, an order was received that the Argyleshire regiment should proceed to Scotland, to be disbanded; and that event took place in the end of July following. Even to the last the Ophthalmia extended itself to those who had not before been affected by it; but although, from its commencement to the reduction of the regiment, several hundred individuals had been seized with it, in not a single instance was it fatal to vision. In

only one case did the sight appear to be endangered; but I have not been able to learn the event of this case. The disease, in a multitude of instances, had all the virulent malignity which I have observed to prevail in the Egyptian regiments themselves; and I ascribe my comparative success to early and repeated scarification.

Insufficiency of the usual exciting causes to account for the appearance of the preceding Ophthalmia.

That the Ophthalmia, which appeared in the second regiment of Argyleshire Fencibles, was neither symptomatic of, nor did it alternate with any other general disease, is evident, because no such general disease existed; and indeed, during its prevalence, the regiment was otherwise unusually healthy.

That it ought not to be considered as an epidemic, depending upon some change in the state of the atmosphere, appears from the circumstances that it was confined to a limited number of individuals, although exposed to the same atmosphere as thousands around them; and seemed to extend itself only in proportion to the degree of intercourse with those labouring under it.

That it cannot with justice be referred to the agency of external existing causes, is presumed from the limited nature of the action which they could have exerted, and demonstrated by the fact, that it not only occurred, but maintained itself, where their influence could not be traced to have existed.

Cold and moisture, heat and light, have, no doubt, considerable effect in producing inflammation of the eyes; but their operation ceases when the powers themselves are withdrawn, and continual exposure to their agency seems to render their influence altogether nugatory. But what more clearly evinces the inefficiency of the ordinary causes in the present case is, the circumstance that the same regiment, two years before, on its passage to Gibraltar, had been subjected in an equal manner, and for a longer period, to the influence of them all, without any such effect being produced. From a similar inattention in not caulking the gun-ports of the ship, on that, as on the latter occasion, the water often rushed upon the deck in one continued stream, and both the soldiers and their bedding were frequently immersed in it, but not a single case of Ophthalmia made its appearance.

On its arrival at Gibraltar, the great heat of the sun, and the reflection from the arid rock, were sufficiently strong exciting causes to have called forth any predisposition, had such existed, but no disease of this kind occurred.——During its stay there, occasional cases of Ophthalmia appeared, but they could in general be traced to their source, and vanished with their causes.

The crowded state of the ship, occasional fumigations with gun-powder, and continual smoking of tobacco, are so many reputed causes of Ophthalmia; but these had all existed on former occasions, under similar circumstances, in greater degrees, and for longer periods, without being followed by any such effect.

Brisk winds and the dust of roads are enumerated, and deservedly, by every writer on the subject, as exciting causes of Ophthalmia; but their effect is temporary, and in general ceases with their removal. Nor did it appear that the disease which prevailed in the Argyleshire was, in the first instance aggravated by their conjoined operation, which naturally took place on the march from Portsmouth to Colchester, but that, on the contrary, it was suspended during that time.

Hence then it appears, that neither cold nor moisture, acrid fumes, the heat of the sun, nor dust and wind, have always the power of producing inflammation of the eyes, even when applied for a considerable length of time, and are therefore insufficient to account for the production of a disease, which so rapidly and widely extended itself under opposite circumstances, and which raged with its greatest violence, at a time when these causes did not operate, and when, therefore, they could not be supposed to have contributed to its production.

Analogy subsisting between the preceding Ophthalmia and contagious Diseases in general.

Some contagious diseases, such as lues venerea, require absolute contact to produce the effect, while in others, as small pox and measles, it is sufficient to breathe the atmosphere of the same room with the person under disease. But even in the most malignant cases, the sphere of action does not extend beyond a few feet from the source.

If left to nature, they exhibit certain regular periods of rise and decline, and in these instances

they seem to follow unequal periods. But if they are interrupted by art, these catenations of motions are broken, new associations are formed, and these changes cannot therefore be ascertained with sufficient accuracy.

Contagion, like every other material substance, is susceptible of partial accummulation and diminution, and in general produces its effects according to the degree of concentration in which it exists. Every circumstance which prevents its free diffusion in the atmosphere, such as the crowded state of ships and jails, favours its accumulation and aids its operation.

In most cases it seems necessary, in order to produce its full effects, that the body should be predisposed by debilitating powers, or, in other words, that causes which tend to change the state of its irritability had operated, although at times it extends itself under the most opposite circumstances.

These are a few of the leading laws of all contagious diseases; and the Ophthalmia which occurred in the second regiment of Argyleshire Fen-

cibles exhibits, in its origin and progress, a striking coincidence with them.

Thus, a certain period elapsed before it made its appearance, and it occurred chiefly among the soldiers, whose confined situation, and the impure atmosphere which they breathed, materially affected the irritability of their systems, rendering them more easily affected by any noxious power; but when its energy became increased, it extended itself in every direction.

Sleeping in the same room, or approaching near to the eye of a person labouring under the disease, was sufficient to produce it in another person. In this way almost all contagions operate.

The evening exacerbation and morning remission partake of the general nature of febrile disease; and the headach, restlessness, white tongue, and irregularity in the state of the circulation, are proofs that it existed.

The third day was usually the period of change. Contagious diseases follow unequal periods. But in this case, as recourse was had early to medical

assistance, the different gradations became less distinctly observable.

The march from Portsmouth to Colchester, in some measure arrested, altho' it could not destroy the influence of the cause producing the Ophthalmia. Variety of scenery, and changes of situation, produce similar effects upon the hooping cough, small pox, and other contagious disorders.

The march to Norman Cross had a similar effect, but as the disease had existed for a longer period, and individual cases were becoming worse, exposure to exciting causes naturally aggravated the symptoms. The same takes place, and must necessarily do so, in every disease where particular organs are chiefly affected.

Proofs that the preceding Ophthalmia was occasioned by the operation of a specific contagion.

Reflecting on the origin and progress of this Ophthalmia, the inefficiency of the ordinary exciting causes to account for its production, and the striking resemblance which it had to contagious

diseases, I was led to believe that it might be occasioned by the operation of a specific contagion imported from Egypt.

I had not at that time had an opportunity of seeing what the French physicians had written on the subject; but, from conversations which I had with several of the medical gentlemen attached to the British army in Egypt, on their return from that country, I found that although they were unwilling to give into the idea that the Ophthalmia which prevailed there was contagious, they all agreed that it was uncommonly sudden in its attack, commencing with the sensation of a foreign body in the eye, and often proceeding the length of suppuration in the space of an hour, exhibiting marks of the highest inflammation, and attended with the most exquisite pain. This description applied exactly to the disease which had fallen under my own observation, and both differed in degree from any species of Ophthalmia which I had either seen or heard of: From thus discovering a similiarity in their rise and progress, I was led to infer the identity of the two diseases. Besides, that very disease which had raged in Egypt, and had been fatal to the sight of multitudes, had existed on

board the Delft for a considerable time, and in an extensive degree, and at the time, when the Argyleshire was on board did actually exist in the person of one of the lieutenants of the ship. The soldiers of the Argyleshire slept in the same hammocks which had been occupied by the Guards, among whom the disease had widely prevailed.—Here, there were two sources of infection continually applied; the human body under the influence of disease, and concentrated fomites in the bedding; and when we reflect on the numerous instances on record of contagion producing disease, after a long period had elapsed from its exhibiting any sensible effects, the two months which the Delft remained at Gibraltar, and the repeated fumigations which she underwent, will scarcely be deemed sufficient to destroy the influence of so subtile and penetrating an agent.

But although, from these circumstances, a belief in the contagious origin of this Ophthalmia seemed irresistible, yet the general principle that Ophthalmia was contagious, could not be considered as sufficiently established, until it should appear that other regiments, or other great bodies of individuals exposed in a similar manner, should be equally affected by it.

A short time before the Argyleshire left Gibraltar, the garrison consisted of it, the Banffshire, Cambrian, and Prince of Wales's, Fencible regiments; two battalions of the 5th, an Engineer and an Artillery corps, all of them very healthy. It was the intention of Government to bring the four first mentioned regiments to England, and to replace them from the Egyptian army, as soon as the particular regiments destined for that service should arrive. The 23d was the first that arrived. It had many cases of Ophthalmia, but it had barracks and an hospital apart for itself, and very little communication, at least for a considerable time, took place between the sick of it and the soldiers of other regiments. The second battalion of the Royals and the 8th were the next that made their appearance; and to make room for them, the Argyleshire was embarked. The Royals came into the barracks which the Argyleshire occupied, and the 8th was conveyed to its hospital. Both of these regiments had a great number of men labouring under Ophthalmia, but as the Delft sailed soon after the embarkation of the Argyleshire, there was little communication with the Royals; although, from necessary delays in removing the convalescents on board, some intercourse took place be-

tween them and the sick of the 8th. It is probable, therefore, that this intercourse also might have had some effect in imparting infection.

Now, it appeared a perfectly legitimate inference, that if this Ophthalmia were really contagious, it should not be confined to one regiment alone, but should be extended to those regiments which remained at Gibraltar after the Argyleshire had left it, and which from daily intercourse with those labouring under it, became necessarily more exposed to its influence. To ascertain this important point, I wrote to the surgeons of these regiments, and I shall state the result of my correspondence.

By a letter received from Mr Robinson, the assistant surgeon of the Banffshire Fencibles, on this subject, I was informed that the Ophthalmia prevailed very generally in that regiment several weeks before its departure from Gibraltar. My notion of its contagious nature seemed to have gained ground, for he (Mr Robinson) " thinks the infection was received from the 8th regiment, which had many ill of this complaint when it arrived from Egypt." He adds, " the invasion was sudden, and the inflammation, if by any accident it was neglected for

a day, increased with uncommon rapidity;" that most of the cases yielded to smart doses of calomel at night, and salts next day, and, except in a few instances where he had recourse to blisters on the temples, these were the only remedies necessary for their cure.

This account coincides with the history of the preceding Ophthalmia, with this difference, that it seems to have appeared under a milder form in the Banffshire, than took place in the other regiment. Both, however, agree in their affinity to the Egyptian Ophthalmia.

Some time thereafter I was favoured with a letter from Mr Ives, surgeon to the Cambrian Fencibles, dated Bristol, May 1802, which came to hand after the publication of my pamphlet; from which I shall make a few extracts. He says, "In answer to your queries, I have to state that we arrived in England, on board a transport called the Loyal Briton, which had long lain at the New Mole, and had not brought troops from Egypt. There had but few vessels arrived from Egypt when we sailed; what few troops were on board

them were poor fellows, blinded by Ophthalmia, some few chronic dysenteries, and convalescent wounded men. With regard to the Ophthalmia *Gibraltariensis*, it did not appear during our passage, nor any other disease; but since our arrival here, some few cases have presented, with exactly the same symptoms as at Gibraltar. *I very much suspect some infection in the case.*"

I consider the concluding observation of considerable importance; for, in several conversations with this intelligent gentleman on the probability of the Egyptian Ophthalmia being contagious, he had always opposed such an opinion, and I conceive strong and convincing reasons must have occurred to have induced him to change his opinion.

My letter to Mr Wylde, the surgeon of the Prince of Wales's Fencibles, I believe, miscarried, as I never received any answer to it; which I am convinced would not have been the case, had not some accident befallen it; but I have since heard that this regiment was affected in a similar manner with the rest.

Such was the state of the opinion respecting the contagious nature of Ophthalmia, and such were the arguments upon which that opinion was founded, when I ventured to publish my small pamphlet on the subject. But I returned to Gibraltar four months thereafter, when I had an opportunity of seeing the original disease under its various forms, and of confirming, by personal observation, the truth of my first opinion.

The regiments which then composed the garrison of Gibraltar, and which had replaced the Argyleshire and others, had all been in Egypt, and had all suffered more or less from Ophthalmia.—They brought with them to Gibraltar their Ophthalmic cases, and for a time the disease seemed to be on the decline; but after a short interval, it broke out anew, and with increased severity. Many who had escaped it entirely in Egypt were now affected, and the garrison surgeon, Mr Pym, an accurate and intelligent pracitioner, and who had also become a contagionist, informed me, that the men of the Argyleshire, Banffshire, and others, who had enlisted into the Egyptian regiments, had suffered in a peculiarly violent degree.

The two battalions of the 5th, which had not been in Egypt, and which still remained at Gibraltar, seemed to be as generally affected with the Ophthalmia as the Egyptian regiments themselves; and to many of them the loss of sight was as complete as if they had been subjected to the desolating sands of Lybia.

This Ophthalmia was not confined to the military alone. Many of the inhabitants were also afflicted with it, several of whom I had an opportunity of examining myself; and the medical practitioners of the place declared, that they had of late been consulted more frequently than usual concerning inflammation of the eyes, which they hesitated not to refer to contagion received from the army. The army surgeons, whom I met there, were of the same opinion.

It is not an easy matter to demonstrate separate existences, and the word *contagion* has on that account been frequently looked upon as an expression of an unknown cause, and a cover for ignorance. But although chemistry has never yet been able to unfold to us its constituent principles, or render it expressly an object of our

senses, its agency on the human frame is sufficiently well ascertained to admit of its being reasoned upon as an operating principle in the production of disease.

Contagions vary in their nature, in their mode of operation, and in their effects upon the human body.

Some are the same at present as they were at the first moment of their formation, and seem incapable, as far as we can observe, of being produced by any known combination of circumstances. The morbific matter giving rise to their appearance, remains often long dormant, until circumstances favouring its operation take place, when it breaks forth with undiminished energy and uniformly attended by the same phenomena. These diseases are characterised by the singular and mysterious property of affecting persons only once in the course of their lives, although repeatedly exposed to their action. Such are small-pox, measles, and chin-cough.

There are other contagions which, although they retain their primary power of producing specific disease in the system, and are incapable of spon-

taneous production, are yet subject to a variety of modifications, and occasionally change their original type, and the system is not secured by one attack from their effects, but is liable to be affected upon every new application of the virus. Such are lues venerea, and perhaps the plague.

There is still another class which appears to be the spontaneous production of a certain combination of external circumstances; appear often in situations where they had never before been observed to have existed; seem in a great measure to depend for their propagation, in the first instance, upon the extent of morbific action that takes place; are uniform in inducing specific disease; attack the human frame on every successive exposure to their influence, and not only spontaneously cease, but may by certain arrangements be absolutely destroyed. Such are genuine typhus, jail and hospital fever, dysentery, &c.

In attempting to trace the probable progress of any contagion, we should begin by viewing it in the state of its greatest simplicity. Of the origin of small-pox, lues venerea, and some others, we have nothing like authentic information; but it is

highly probable, from the very obscurity attached to their commencement, that their beginnings were inconsiderable, and had the first victims to their malignity been separated from the rest of mankind, it is probable that they might either have been entirely destroyed at their formation, or at least been greatly circumscribed in their action. But ignorance of their nature and influence favoured the intercourse which promoted their propagation, and they soon became too widely extended to admit of circumscription. The thoughtless indiscretion of one individual has, perhaps, for ever entailed misery on the innocent natives of Otaheite, and the beneficial discovery of vaccination bids fair to exterminate one of the most malignant contagions.

Of the origin of some others our notions are more precise, and our proofs more satisfactory.—We can, in some degree, trace the evolution of the noxious principle, arrest its progress, and, in some instances, destroy its action. Exposure to the effluvia which issues from marshy grounds, the borders of stagnant lakes, and ill-cleared woody countries, has the property, when applied to the human body, of generating in it a peculiar kind of febrile action. Clearing the country of its redund-

ant wood, draining the soil, and cultivating the land, render inefficient any subsequent effluvia from the same situation to produce a similar disease.

When a number of people are confined in a small circumscribed space, as occurs in jails and crowded ships, deprived of a free circulation of air, and the comfort of daily cleanliness—we observe the countenance to lose its healthy aspect, the appetite to fail, sleep to become imperfect, the muscular organs to be affected with the greatest debility, and the sensorial functions to be deranged: In short, we see exhibited all the symptoms of a typhus fever. The separation of the individuals, removal to airy situations, cleanliness and constant ventilation, limit the agency of the power to the individuals first subjected to its agency, and the principle is in many instances absolutely extinguished. And although we may not be able to ascertain the nature of the chemical actions which effect these changes, the fact is obvious and consolatory.

But the continued action of the marsh effluvia upon the human body, or the accumulation of a greater number of individuals in the confined apartment, while other things remain the same, extends

the range of the noxious principle and concentrates its energy.

A body under the influence of this morbific principle emits a peculiar kind of exhalation, which is often perceptible to the organ of smell; and as the human frame is liable to be affected, even by slight variations of temperature, or other trivial causes, it is easy to conceive that the absorption by respiration, or the introduction by any other channel of any portion of such an exhalation, immediately emanating from a diseased body, might disorder the functions of a healthy one. Now, this is what actually takes place, what has long been proved by undeniable evidence, and what the experience of every day confirms. But the functions are not simply disordered; the same train of morbid actions are reproduced with wonderful uniformity *, and the disease is thus widely extended

* Such a similarity is what we naturally expect to find, although we are utterly unable to explain why it should be so. The impenetrable veil which has hitherto shaded the minute and intimate operation of organized systems of matter, precludes even an approximation at the truth. The ever-varying degrees of heat and motion to which the fluids and even solids are every moment subjected, invalidate the force of general doctrines, and give such opposite results to the most correctly

from one individual to another, long after the causes first producing it had ceased to operate.

Diseases contracted in this way are said to be contagious; and contagion may therefore be defined, the emission from body to body of a peculiar matter, generated within the system itself, which has the property of producing the same disease in a healthy body, if brought within the sphere of its action, as exists in the one from which this matter is evolved.

According to this view of the subject, there seems to be no necessary limitation to the number and diversity of contagions. For, whenever any peculiar combination of circumstances had generated a disease, if, while they tended to extend it to other individuals, circumstances concurred to

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instituted experiments. Substances do not affect the body in proportion to the quantity of what we denominate their active quantities; but according to laws very widely different. A grain of the white oxyd of arsenic does not impress the organs of taste, as being peculiarly acrimonious, nor does any chemical test prove that it contains more of the principle of astringency than a drachm of the powder of galls; yet, variously administered, this apparently inconsiderable quantity can destroy life or cure disease.

aid its operation; it may safely be affirmed, without any violation of probability, or indeed of truth, that such a range of disease may be produced as would be adequate to maintain and propagate itself.

In this latter class of contagions, or those of spontaneous production, we may place Ophthalmia. It owes its origin to external causes; a few instances do not appear sufficient to spread the disease, but when the number becomes considerable, it extends itself during the absence of its primary causes; it is uniform in its phenomena; one attack, instead of securing the system, renders the organ affected rather more liable to succeeding attacks; and its agency can be suspended for a time, without being destroyed.

The influence of this contagion does not appear to extend far from the source of its evolution, as, for a considerable time after the first appearance of the disease, it seemed to require almost immediate contact to communicate it to others; for it was confined to the soldiers, two of whom always sleeping in one bed, the sick and the healthy are often indiscriminately mingled together. It is probable

therefore, from this circumstance, that a great proportion of the cases of this malignant Ophthalmia occurring in regiments are occasioned by the direct application of virus to the eyes. Those individuals who have attentively guarded against too near an approach, have in general completely escaped.

It is difficult, however, to state with precision the actual sphere of action of the Ophthalmic contagion, as from the circumstance of the disease having been considered as a local one, the periods of exposure to its agency being frequent and indiscriminate, were either overlooked or forgotten.—But from the inquiries which I have made at others, and from what has occurred to myself, I am inclined to believe that the influence of this contagion, operating through the medium of the atmosphere, does not in ordinary circumstances exceed the space of a foot. As the discharge of morbific matter, however, from the eyes, in cases of virulent Ophthalmia, is continual and abundant, an ample source of infection is constantly present, and without extreme care and attention to avoid intercourse with the bedding or clothes of those labouring under it, the disease may be unconsciously propagated to a wide extent.

This opinion of the limited range of the Ophthalmic contagion, is supported by the history of its propagation. On the return of some of the Egyptian regiments to Malta, the inferior class of courtezans were among its first victims, and, by degrees, it became very general over the island.—Multitudes of soldiers, on their arrival in England from Egypt, laboured under Ophthalmia. Some accompanied these regiments on their march through different parts of the country, and others were discharged at the peace, and returned to their respective homes. Intimate and frequent intercourse naturally took place between them and persons in perfect health; cleanliness, at any time but little attended to by the lower ranks of society, was here disregarded, for the disease was considered as local and uninfectious. Owing to these circumstances, Ophthalmia appeared at the same time in the most distant parts of Great Britain; and that peculiar modification of it, denominated Egyptian Ophthalmia, is now familiar to almost every medical practitioner. A striking instance of what may be deemed the action of the virus in the state of fomites, occurs in a late publication on the Egyptian expedition. "It is worthy of remark, (says the author) that many persons, whose eyes

had withstood the burning heat and pernicious glare of the Egyptian sands, was afflicted with this complaint (Ophthalmia) when at sea on their return home *." This temporary suspension, and afterwards a renovation of power, is eminently characteristic of a contagious principle. A striking occurrence of this kind is mentioned in the *Star* of the 15th July, 1806. "Notwithstanding that the second battalion of the 52d regiment has been removed to Maidstone, the Egyptian Ophthalmia continues to rage in a terrible degree. The number of men already blind by it is immense. This terrible disease has for nine months resisted every remedy." This may account also for the occasional suspension, as well as sudden appearance, of Ophthalmia, so frequently observed; and the fact is incontrovertible, that Ophthalmia has been much more frequent and general in its occurrence, and more destructive to sight, within these last three years in this country, than at any former period †.

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* Walshe's Journal of the late Campaign in Egypt, page 182.

† The opinion that the Egyptian Ophthalmia is contagious, does not now rest on my single evidence. It has already received the support of that of two others. See *Power's Attempt to investigate the Cause of the Egyptian Ophthalmia*, 1803; and *Dewar's Inaugural Dissertation*, 1804.

PART III.

As connected with this subject, and in some degree illustrative of its contagious nature, I propose, in this part of the Inquiry, to give some account of an Ophthalmia which appeared at Paris in the months of February and March 1803. The circumstances attending it are striking, and deserve to be recorded; and although perhaps not so eminently characteristic of the agency of a contagious principle, as occurs in the preceding history, yet when coupled with it, will, it is presumed, afford no inconsiderable accession of strength to the opinion which classes Ophthalmia among the contagious diseases.

About the 25th of February, 1803, Ophthalmia began to prevail very generally over Paris; and before the 20th of March following, nine-tenths of the inhabitants of every class had been affected by it. Indeed it was so common a thing at that time to be afflicted with this complaint, that it obtained the appellation of *Maladie à la mode*.

It seldom attacked the whole people living together in the same house at the same time, but more frequently went through them successively.

Strangers arriving in Paris in perfect health were often attacked with Ophthalmia the day after their arrival. A considerable number of individuals affected with this complaint were almost always to be seen at the Hotel-Dieu; and one of the attending surgeons, and the greater number of the hospital pupils, were seized with it nearly at the same time.

It was often connected, and alternated with *la grippe*, or the influenza, which had raged in that city for a conisderable time, and was then beginning to abate.

Towards evening was the usual period of attack, and it commenced with a sense of tightness over the eye, accompanied with itching, and a sensation of a foreign body in it. The next morning the eye was much inflamed and painful, and the eye-lids very much swelled.

The inflammation began in one eye, but in scarcely a single instance was it confined to that, but,

most commonly about the same hour at which it began on the former day, the other eye was attacked, notwithstanding every precaution being taken to guard against it.

In many cases it was accompanied by head-ach and general fever, and, in a few instances, the local inflammation was severe and of considerable duration. But more usually the inflammatory diathesis subsided in about twenty-four hours from the time of its first commencement. But relapse was frequent, and where that repeatedly occurred, the eye remained long in a weak and irritable state.

Bleeding by leeches, saturnine lotions, cooling physic and pediluvium, were the chief remedies employed in its cure, and generally with success.

This Ophthalmia, as far as I could trace it, first began at Paris, and afterwards spread to the neighbouring towns; and what is curious to remark, it prevailed to the greatest extent, and appeared earlier, in those places which had the most direct communication with the capital. Thus it appeared sooner, and was more general at Versailles than at

Saint Germain, although the former is the farthest from Paris; and at St Cloud, then the chief residence of the first consul, it was more general than at either.

As the causes of this Ophthalmia were by no means obvious, little pains were taken to investigate them. In conversations which I had with some of the Parisian physicians on this subject, they admitted that the disease was epidemic, and referred its appearance to changes in the state of the weather.

Although its efficient causes were extremely ambiguous, yet the variable and unsettled state of the weather previous to its appearance, might no doubt have had considerable effect in its production. But as it continued and even spread under very opposite states of the atmosphere, such an explanation as applied to it on every occasion, is vague and unsatisfactory.

From the middle of January until about the 25th of February, the weather had been extremely variable, and the cold often intensely severe. It was during this period that the influenza raged with its greatest malignity, and when it was attended by

the greatest fatality of event. This Ophthalmia began about the 25th of February, and had almost ceased at Paris by the 28th of March following.—Between the 25th of February and the 3d of March, the weather was uncommonly fine; but some snow fell on the 3d of March, and remained upon the ground until the 20th of the same month, when the disease began to disappear rapidly. After that the weather became uncommonly fine, and no more snow fell there that season.

I went to Versailles the 29th of March. The Ophthalmia was then very prevalent there, and in general more violent in its symptoms than what it had been observed to be at Paris. From inquiries which I made, I learned that it had not appeared to any extent in that town until about nine days before. Now, that was the very time when a decided change had taken place in the state of the weather, and when the disease had subsided at Paris; and as Versailles is distant only 15 English miles from that city, and lies in the same plain with it, the climate of both may be considered as the same.

This is another, and a very marked instance of Ophthalmia appearing on a great and widely extended scale, where no obvious exciting causes have been satisfactorily shewn to have operated in its production. It is very closely allied to that stated by Lanzoni to have occurred at Ferrara in the year 1722. Its sudden and simultaneous occurrence in the first instance among a great number of persons, implies the influence of some general cause; and there is none more likely to produce such an effect than a deranged state of the atmosphere, either as to the state of its density, or to that of its temperature, or perhaps to both.—But its subsequent continuance and propagation, when the particular atmospherical change which might be supposed to have favoured its first production no longer existed, cannot surely, in strict reasoning, be referred to the agency of the same power.

In a medical sense, diseases are said to be epidemic, which fall out at once upon a great number. In such cases, it is usually understood that all have been alike predisposed before the application of the noxious power; or, that the power, when first applied, is sufficiently energetic to give

rise to morbid action in the system. The disease which ensues, although embracing a wide range, depends nevertheless upon the agency of this external power. So long as it sensibly acts, or its influence can be supposed to operate, we say that the affection is epidemic, and we believe that to produce a similar disease in another person, it is necessary that this person be subjected to the agency of this general cause.

Thus in Spain and in Italy, where several months of the summer pass over without a drop of rain falling upon the ground, the continued action of the sun diminishes the density of the atmosphere, and perhaps also slightly changes the proportions of its constituent principles; for the degree of bodily exertion, which under other circumstances would have produced no sensible effects, is then attended with a sense of lassitude and slightly impeded respiration. The rainy season, which constitutes the chief winter in those climates, usually sets in about the end of September, and the equilibrium of the atmosphere is again restored. But if the arrival of the rain be protracted much beyond that period, a fever of an inflammatory type suddenly breaks out among great numbers of people, and very often on the

same day. The fall of rain, if it be considerable, and attended by a change in the wind, by restoring to the air its wonted salubrity, arrests the progress of the fever, and prevents its further dissemination.

Such occurrences frequently take place. On the 12th and 13th of January, 1801, the whole garrison of Gibraltar was affected with fever. Officers, soldiers, and inhabitants seemed to be equally subjected to its influence. It commenced with all the symptoms of pure synocha, but in a day or two the body became yellow, the bowels torpid, and there were exhibited all the symptoms of the yellow fever of tropical climates. The rains generally commence in that quarter about the beginning of October, and continue, with little intermission, until May of the next year. Instead of this, no one living remembered so dry a season. Between the 4th of October and the 12th of February, there had been only four days of rain; and for a fortnight preceding the appearance of the fever, the wind had been from the east. On the 12th of February heavy rains and southerly winds came on, and continued for some time. The fever then began almost immediately to abate, and by the end of the same month it had completely subsided.

There was no direct proof of its being contagious. Indeed its sudden invasion, and equally sudden disappearance, were adverse to such an opinion; but in many instances, previous to the falling of the rain, the primary type of the fever appeared to have been changed, and it had become more decidedly of a typhoid cast.

But when after this generally deranging cause, or unhealthy state of the air has ceased to operate, and when, from a variety of circumstances, we have been convinced that it no longer exists, the further propagation of the same disease cannot with justice, be referred to its influence. To return to the illustration already adduced. If, after a general fall of rain, and such other concomitant circumstances as had effectually changed the state of the atmosphere, and restored it to a state of salubrity, such a fever not only existed, but seemed to spread with rapidity, and in proportion as communication was maintained with the persons of those labouring under it, the disease should in that case cease to be considered as epidemic, and ought in strict propriety to be denominated contagious *.

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* Lind, Pringle, &c.

In contradistinction to an epidemic, which requires a certain predisposition of frame, or the presence of an extensively energetic cause, a contagious disease propagates itself by the emission from body to body of a peculiar matter, generated within the system, whose action is often independent of the influence of external causes.

The fevers of Cadiz, of Malaga, of Gibraltar, and the influenza of 1803, are illustrations of this fact. The fever which raged at Cadiz in 1800, and which has occasionally since manifested itself in that town, began in one street, and after continuing a short time there, gradually extended to the other parts of the city. The season had been unusually hot and dry, and the ignorance of the Spanish physicians aggravated the disease to a degree of pestilential virulence. The hot regimen, so pernicious in febrile affections, is not abolished in Spain; and when the easterly or Levant winds prevail, they carefully shut their doors, with the view of opposing the entrance of what they deem a morbific air. Thus the very management of disease tends to maintain it; and ventilation, so necessary to the prevention and removal of contagion, has here but a limited operation.

The fever of Malaga had a similar origin. From deranged states of the atmosphere began general febrile action. The causes producing it were unusually protracted in their action, and co-operating with diseased human effluvia, generated a contagious disease of singular malignity.

Something of the same kind appeared at Gibraltar in the year 1804. At first it put on the accustomed appearance of the annual fever of that climate, of which a sketch has already been given, and it was then perhaps justly considered of a nature similar to those which had preceded it. The causes which first produced it, however, still operating with undiminished energy, extended the range of disease. And although, from the superior skill of British physicians, cleanliness, and ventilation, which silently operate in preventing and destroying contagion, would be carefully attended to, yet it is much to be apprehended that the diversity of opinion which prevailed respecting its nature, and perhaps some deficiency of discrimination between its primary and secondary effects might materially affect its duration, and thereby augment its fatality. The salutary measures, how-

ever, adopted by the philanthropic governor * of that garrison, finally put a stop to its ravages.

Hence, I think it may be stated as a general principle, that every epidemic disease, altho' dangerous in the first instance to those only who are immediately within the range of the power that produced it, may after a time become contagious, when it will affect indiscriminately every person that comes within the sphere of its action †.

The Ophthalmia, therefore, of which a history has just been given, was most probably produced by some external general cause; but that it was

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* General Fox.

† Much has been written on the subject of epidemic and contagious diseases, and many attempts have been made to ascertain the limits of each; but seldom has the investigation been conducted with that dispassionate coolness, which ought ever to regulate an inquiry after truth. The plague and the yellow fever, those great destroyers of the human race, are considered by one set of physicians as dangerous and contagious, and by another set as harmless endemics of the countries where they prevail. The most furious contests have been entered into, to maintain these opposite opinions, and that not unfrequently from a motive disgraceful in science, that opinions once asserted, however incompatible with truth, should never be retracted.

afterwards propagated by contagion, seems to be evinced by its peculiar mode of attack; by the progress of its symptoms; and by its extending itself to places around, in proportion as communication was maintained with the spot where it first appeared.

PART IV.

THAT Ophthalmia which rages in Egypt, and which, from the peculiar malignity of its nature, has been considered by some as a disease *sui generis*, has of late much attracted the attention of medical men. Though annually fatal to the sight of multitudes in that country, it was scarcely known in Europe but by name, until the lust of universal domination carried to Alexandria the arms of Bonaparte, and the accurate Bruant first detailed its ravages among his followers.

Although this Ophthalmia be more violent in degree, more permanent in its existence, and more frequently fatal to vision, than what any similar form of this disease is observed to be any where else; yet, as the same organ is affected, and as the appearance of the parts is nearly the same in all cases, it ought not, in strict propriety, to be considered as a distinct and separate affection, but as a peculiar variety of a more general disease, modified by the causes which produce it. The

history of its symptoms, and its treatment, fall therefore to be considered in another place. Here it is proposed merely, to examine into the nature and influence of its causes, and to endeavour to discover whether, in Egypt, Ophthalmia be propagated by contagion.

The alternate exposure of the body to the burning heat of an almost vertical sun, and the heavy dews of the night, which operate in the climate of Egypt, must no doubt at all times have imparted a tendency to ocular inflammation, yet it does not appear from the writings of the ancients, that Ophthalmia was either very prevalent or very violent in the earlier days of Egyptian grandeur, when population and agriculture occupied those plains which are now in a great measure devoted to the action of the elements.

Herodotus, Strabo, Diodorus Siculus, Pliny, and other ancient writers who have visited Egypt, all speak of the fertility of its soil, the variety and luxuriance of its productions, and the purity of its atmosphere. A very high and ancient authority speaking of Egypt, and contrasting it with Syria, says, " For the land, whither thou goest in to pos-

" sess it, is not as the *land of Egypt*, from whence " ye came out, where thou sowedst thy seed, and " wateredst it with thy foot as a garden of herbs *." Herodotus also expressly states, that Egypt was the most fertile country, and that it possessed the most salubrious climate in the world; that it contained many thousand inhabited cities, and an almost incalculable number of inhabitants, who boasted of the rare abundance of their soil †. Like every other country, it had its share of diseases, but they do not appear to have been either more numerous or more peculiarly malignant than what fell to the lot of other countries, whose situation was similar to its own.

The Roman physicians, who, in their illustrations of the nature of diseases, generally mention the prevalence or absence of particular affections in different climates, are altogether silent on the subject of Ophthalmia, as being endemic in Egypt. History indeed records one or two instances of the Pharaohs having died blind; but such instances are not singular. From the history of Alexander

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* Deut. cap. xi. ver. 10.

† Her. lib. ii. cap. 177.

the Great, who remained a long time in Egypt after the conquest of that country, we do not learn that Ophthalmia prevailed among his troops. In the desart indeed, they suffered much from the sand, but not in Egypt itself. Nor does the accurate and philosophical historian of Cæsar's oriental wars state, that his soldiers suffered from this disease during their residence in Egypt. Even long after the extinction of the Roman name in the East, it does not appear that disorders of the eyes were very prevalent either in that country or in Syria. The swarms of European armies which the crusades drew thither, were frequently assailed by disease, but neither the cotemporary nor succeeding historians take notice of any malignant affection of the eyes appearing among them. At that time, however, although much degenerated from her original greatness, Egypt was still an independant sovereignty, and, compared with her present state, a populous and a highly cultivated country.

In the memorable French expedition against Egypt under the celebrated St Louis, in the year 1249, among the various diseases which harrassed that gallant army, Ophthalmia is not included in the number. The French troops remained up-

ward of eleven months in the country, and from the perilous nature of their campaigns, were almost hourly exposed during the whole of that time to the full influence of the climate; but although "fatal epidemics and obstinate dysenteries" raged among them, they appear not to have been much affected with disorders of the eyes; and surely, had any such malady prevailed among them, it could hardly have been passed over in silence by a cotemporary writer *, and one who well might have said, *quarum magna pars fui.*

While Egypt was a populous country, and agriculture flourished in it, diseases were comparatively few, and Ophthalmia, as an endemic, unknown. But when it ceased to be a separate and an independent state, and sunk into a distant province of a tyrannical government; when it became divided among tribes of illiterate barbarians, among whom property, and even life itself were insecure, unless continually watched, and in whose eyes the semblance of happiness was a crime, agriculture and the arts of peace became matters of but secondary consideration. The fertilizing canals which

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* Joinville.

traversed its plains were gradually choaked up; the ditches which drained the soil, and opposed a barrier to the sands of the desart, were soon obliterated; and fields which had once been clothed in the richest verdure, were converted into sandy wastes. - According to the opinion of most modern travellers, fully a third part of the land which was formerly cultivated in Egypt, is at present in a state of frightful sterility, and the desolating sands of Lybia are making annual encroachments upon what remains *.

General Regnier is of a different opinion, and thinks that very little indeed has been done by the sands of the desart in obliterating the marks of cultivation. To this general position he admits of but one exception, and this occurs in the province of Gizeth, near the village of *Ouardan*. There the sands have advanced even to the Nile. In other parts, he says, that the places are not overwhelmed with sand, but are simply uncultivated †. But besides, that this single evidence is in opposition to so many other authorities, who have enjoyed equal opportunities of personal observation of

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* Savary, Volney, &c.

† Memoires sur l'Egypt, vol. iv.

the facts, where are now the remains of the numerous cities that formerly flourished in that country, and the canals that enriched them? The diminished rate of population, however, and the neglected state of agriculture, which this gentleman has admitted comparatively to exist in modern Egypt, sufficiently establish the truth of the general opinion.

The present state of the Campania of Rome affords another striking example of the connection between neglected agriculture and the appearance of disease. Formerly, when filled with beautiful villas, and forming one extensive garden, it was considered as an enviable residence, both on account of the salubrity of its climate, and the amenity of the situation *. But now, in the vicinity of Rome, there are plains of many miles in extent,

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* When the Roman army under Crassus, in the ill-fated expedition against the Parthians, had been betrayed by the perfidy of Ariamnes to quit the mountains, and traverse the boundless desarts of sand, the barbarian, tauntingly, addressed the Roman soldiers in these words: "What! do you imagine that you are marching through the Campania of Rome? Do you expect the fountains, the streams, the shades, the baths, and the diversified scenes of amusement, you meet with there?" *Plutarch's Life of Crassus.*

which exhibit every mark of sterile desolation.—The few scattered houses to be met with on the roads leading to the neighbouring towns are filled with poverty and disease; and the *malaria*, a species of remittent, rages throughout the whole year. So very prevalent is this dangerous disease, especially towards the end of summer, that it is deemed unsafe to sleep a single night out of the city; and the inhabitants regularly quit their country-houses at the close of the day, and retire to Rome for the night.

The unhealthiness of the Campania of Rome has also been much increased since papal avarice carried away the greater part of the sacred wood, which had for so many ages interrupted the passage, and greatly diminished the energy of those noxious exhalations which, during the summer and autumn, issue from the Pontine marshes, and which render it unsafe, at these seasons, to pass between Rome and Naples. It is extremely probable also, that the salubrity of the climate of Egypt has been much impaired by the careless culture, and positive destruction of the wood, which was formerly so abundant in that country.——Forests of trees would have formed a most effectual resistance to

the destructive influence of the hot winds of the desart, which blow from the south and east; and that they did so, may be in part inferred from the following observation in Pliny :—" Et Austros in " Ægyptum penetrare negat Fabianus *." But whether or not the south winds did then reach the length of Egypt, it would appear that they had not been accompanied by those dreadful effects which at present attend their appearance, else these accurate observers of nature would not have failed to have stated them.

It is perhaps impossible to ascertain, with any degree of precision, the period when Ophthalmia first became so widely prevalent in Egypt; but it is highly probable, that its occurrence was in some measure connected with the final subjugation of that country by the Turks. It then became a distant province of an arbitrary government. Subjected to the rapacity of ignorant rulers, who had little interest in its prosperity, and whose only view was to enrich themselves during their precarious sovereignty, it became the constant scene of plunder and revolt. Commerce was loaded with re-

* Pliny, lib. i. sec. 46. ventorum genera.

strictions, which rendered it almost impracticable—the number of its inhabitants gradually diminished, and the land was cultivated only to supply their temporary wants *. Idleness and the indulgence in depraved habits rendered the frame obnoxious to general disease; and the constant use of the turban, enjoined by the rigid tenets of the Koran among all ranks, weakened and exposed the eyes directly to the action of every exciting cause of Ophthalmia. Of all the modes of dress that could well have been devised, this one is perhaps the least calculated of any to protect the eyes from the influence of the sun's rays; and the baneful effects which a constant exposure to them has in weakening the organs of vision, are felt wherever the Mahometan religion prevails. In Morocco, Tangiers, Tetuan, and the other towns of Barbary which have been visited by modern European travellers, the number of blind, and those affected with partial loss of vision, is very great; while, in the Antilles, many of which are much nearer the line, and consequently exposed to a more intense heat, Ophthalmia is not of more frequent occur-

* L'art des jardins, cet art si cher aux peuples policés et ignoré des Turcs qui meprisent les champs et l'agriculture. Volney—Voyage en Syric, vol. i. p. 239.

rence than in the most temperate regions of Europe.

But if we examine the authentic details of more modern travellers, the change will be striking. Whatever might have been the former state of Egypt, at present it appears to be the very cradle of Ophthalmia. By hereditary predisposition it is deeply ingrafted in the constitution of its inhabitants before their birth; and when their eyes first behold the heavens, they become exposed to the causes of this disease, whose agency, under one form or other, is unceasing during the remainder of their lives.

Among the earliest and most accurate is Prosper Alpinus, a Venetian physician, who travelled through Egypt in the 15th century, and who resided some time in that country. He has written a work, entitled, de Medicina Ægyptiorum, wherein he has displayed considerable intelligence, and appears to have been at great pains to explore the nature of the climate, and the diseases of that country.

He divides the year into four parts. The spring,

the season of spontaneous vegetation, occupies January and February. During these two months the weather is temperate and healthy. The hot season commences with March, and terminates in general with August; but he again subdivides this part into two, the first and second summer. The first summer begins with March, and ends with May. During these three months the weather is tempestuous and inconstant. It is then that the winds called in Arabic Campsin, or hot winds of the desart, prevail, carrying desolation and disease along with them. He says, he recollects when once at Cairo during these months, that he felt the winds insufferably hot and distressing, when the great quantity of burning sand so obscured the sky that the sun could not be seen.——His words are, "Memini etenim ego dum Cajri olim "moram facerem iis utique tribus mensibus me "ventos calidissimos, molestissimosque sentiisse, "cum arenarum inflammatarum magna copia, qua "aer ita obscurabatur ut sol neutiquam videri pos- "set. Illóque etiam tempore qua plurimos va- "gasse epidemicos, atque lethales morbos, max- "imèque oculorum lippitudines, quas Græci Oph- "thalmias appellant." And in the same page he describes the baneful effects of these winds, "Pul-

" vis illa vel arena copiosa ventis tum asportata, " tum ex solo Ægypti ventis arrepta, atque per " aërem agitata, non minus quàm aër suo calore, " corpora lædit, atque offendit, oculosque maxime, " quos mordet et inflammat *." The second summer commences where the other terminates, and continues until September. The heat during this period, although great, is steady, and towards September begins to take off. During this period the Nile begins to rise, and the season is healthy. Autumn occupies September and October, and towards the end of the latter month the overflowing of the Nile ceases. The atmosphere during this period is temperate, equal, and healthy. The two following months, which are healthy, but colder, constitute the winter, or fourth season of the year.

From this view it appears that the three first months of the summer are the most unhealthy, and the period when Ophthalmia is most prevalent, when indeed its exciting causes are most numerous and abundant. But although more frequent, its occurrence is not confined to this season alone.——Inflammations of the eyes, he observes,

* Cap. vii. lib. 1.

are very common during the winter at Alexandria, and they prevail at Cairo throughout the whole year, which he refers to the influence of a nitrous powder which pervades the atmosphere, and continually heats and irritates the eyes. " —Hyeme oculorum lippitudines ibi multæ vagantur. Plurimasque Cayri easdem per omnia anni tempora homines invadere ob nitrosum pulverem, qui continuè oculos habitantum mordicat, et calefacit, observatur, longè maximéque in æstatis prima parte, quo tempore calor ambientis summè calidi oculos inflammat : taliumque morborum numerum auget. Sparsim vero per urbem toto anno hæ oculorum inflammationes vagantur ; atque epidemicæ plurimæ in prima æstatis parte calidissima inæqualissimáque ; ob vehementissimorum, meridionalium ventorumcal orem, atque inflammatarum arenarum copiam, quæ ab iisdem ventis asortantur *."

The frequent occurrence of Ophthalmia during the three first months of the summer is thus satisfactorily explained, and indeed the cause is adequate to the most extensive generation of the disease. But the assumption of the operation of a

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* Vide cap. xiv.

nitrous powder to explain its subsequent appearance, is not so conclusive. But as a similar mode of explanation has been adopted by succeeding travellers, it will perhaps be better to defer any observations on this subject until these opinions shall have been stated.

Savary, an elegant and learned traveller, also observes, that disorders of the eyes are the complaints which most frequently assail the Egyptian. He maintains that the climate is otherwise highly salubrious, and says, that his opinion on this subject is supported by the testimony of an old surgeon originally from Nice, who practised medicine thirty years at Damietta. But he admits that the number of blind in Egypt is very great; and the great mosque at Cairo alone, in his time, contained eight thousand of these miserable creatures, who there had a decent subsistence. He thinks that these disorders of the eyes ought not altogether to be referred to the reflection from a burning sun, since the Arabs, who live in the midst of sand, have sound eyes and acute vision: and he objects to the opinion of Hasselquist, who conceives that they may arise from the agency of vapours which exhale from stagnant waters, since,

among the French merchants who reside upon the very borders of the canal of Grand Cairo, there has been only one instance of blindness among them in the course of fifty years. He himself considers the custom which the Egyptians have of sleeping in the open air during the summer time, when they are naturally exposed to vicissitudes of temperature, a chief cause of these complaints; and to this should be added, the mechanical effect of nitre largely diffused through the air, and heavy night dews. His words are, " L'usage où sont " les Egyptiens de dormir en plein air pendant " l'été, ou sur les terrasses de leurs maisons, ou " près de leurs cabanes, est sans doute l'orgine de " cette infirmité. Le nitre, universellement répan- " dre dans l'air, les roseés abondantes des nuits, " attaquent l'organe délicat de la vue, et les ren- " dent borgnes ou aveugles."

In the next page, however, without apparently viewing any connection between their agency and the production of Ophthalmia, he has mentioned exciting causes which operate more or less for four months of every year, and which are eminently competent to produce diseases of the eyes under the most aggravated forms. " Cependant il faut a-

" avouer qu' il est une saison mal-saine en Egypte.
" Depuis Février jusqu' à la fin de Mai, les vents
" du midi soufflent par intervalle. Ils remplissent
" l'atmosphère d'une poussière subtile qui gêne la
" respiration, et chassent devant eux des exhalai-
" sons pernicienses. La chaleur devient quelquefois
" insupportable, et le thermomètre monte tout-à-
" coup de douze degrès *."

Sonnini too, who came after Savary, takes notice of this fine powdery matter which floats in the air, as a principal cause of Ophthalmia in Egypt; and says, that whenever it blew hard in the middle of the day, he had only to expose himself for a moment upon the terrace of his house at Cairo, to experience an acute inflammation of his eyes. He thinks that another great cause of the blindness so prevalent at Cairo, is the frequent washing of the streets and houses. The streets of that city are not paved, and the ground being extremely heated, sends up into the atmosphere, what he calls, nitrous exhalations, extremely noxious to the eyes. He mentions, that after having been cured of an Ophthalmia, under which he had laboured for some

* Lettres sur l'Egypte, tom. iii.

time, his eyes were extremely weak, and whenever the people watered the ground on the gallery where he lived, his eyes became pained, and his sight failed him for a few moments.

He differs from Savary in his opinion of the influence of the custom which the Egyptians have of sleeping in the open air, as a cause of Ophthalmia, since the head especially, is then enveloped in in a large quantity of cloth, which is supposed effectually to protect the head and eyes from the sun's rays *.

The philosophical Volney enters more minutely than either Savary or Sonnini into the investigation of the causes of the blindness so frequent in Egypt. He says, almost every individual that one meets has his eyes bandaged over, indicating a recent or a chronic Ophthalmia. "Presque tout le monde "porte des bandeaux' indices d'une Ophthalmie "naissante ou convalecente †."——He has stated several facts which throw considerable light on the subject.

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* Voyage dans la haute et la basse Egypte, vol. ii. p. 30.

† Volney, vol. i. p. 218.

He observes that inflammations of the eyes, and their consequences, are not peculiar to Egypt, for they occur equally in Syria, with this difference, that in that country they are less widely diffused; and it is remarkable that the sea-coast is the place where they most frequently prevail: that in the city of Cairo, which always abounds in filth, Ophthalmia is more common than in all the rest of Egypt; but he repeats here, in a note, an observation of Savary's, which in some measure accounts for this, "that the blind of the adjacent villages assemble at the great mosque of Cairo, where there is a kind of an hospital." He further observes, that the common people are more frequently attacked than those in easy circumstances; the natives more so than strangers, and that the Mamelukes are scarcely attacked at all.——Lastly, he mentions, that the peasants of the Delta are more subject to diseases of the eyes than the Bedowin Arabs.

In reasoning from these principles, our author thinks, that the southerly winds ought not to be admitted as a chief cause of this affection, since, if they were, the Bedowins should be equally affected as the country people. Nor can he admit this fine

powdery matter which is diffused through the air, to be an operating principle in the production of Ophthalmia, because the peasants are more exposed to its influence than the inhabitants of the town, and yet the former are less frequently attacked with Ophthalmia. It is somewhat curious, however, that causes so powerfully exciting, and of such extensive operation, should be considered of such trivial influence, and by one too who has painted their agency and destructive effects in such lively colours. With his usual energy he says, "Quand ces vents commencent à souffler, l'air "prend un aspect inquiétant. Le ciel perd son "éclat, et n'offre plus qu'un disque violace. L'air "n'est pas nebuleux, mais gris et poudreux; et "réellement il est plein d'une poussiere tres-delié, "qui ne se dèpose pas, et *qui pénètre par tout.*— "Le poumon, qu'un air trop raréfié ne remplit "plus se contracte et se tourmente. La respira- "tion devient courte, labourieuse; la peau est "séche, et l'on est dévoré d'un chaleur interne," &c.

He considers the custom which the Egyptians have of sleeping in the open air of more influence, although even this, he observes, cannot be looked

upon as the only cause; for in the interior of the country, and in places remote from the sea, such as the valley of Balbeck, Diarbekr, the plains of Haurân, and in the mountains, the people are in the practice of sleeping upon their terraces, without suffering from affections of the eyes. If then, he adds, it be dangerous to sleep in the open air, it follows that the atmosphere in the neighbourhood of the sea, acquires from it a noxious quality, and this quality undoubtedly is humidity joined to the heat of the climate, which becomes a chief cause of disease. The saline impregnation of this air, so remarkable in the Delta, is another concurring cause, by the irritation which it excites and the itching which is the consequence of this irritation.——Of the tendency to saline deposition, so well known, he mentions several striking facts. He conceives also that the temperate and apparent slightly nourishing diet of the Egyptians contributes, in an eminent degree, to the production of the disease; and he endeavours, by the help of the humeral pathology, to trace its mode of operation *.

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* Voyage en Syrie et en Egypte, par M. C. F. Volney, vol. i.

But to the medical gentlemen who were attached to the French army which invaded Egypt, under the command of Bonaparte in 1798, the world is indebted for the first accurate information respecting Ophthalmia on an extensive scale.

That army landed at Alexandria in July 1798, and about twenty days thereafter was attacked with fever, dysentery, and inflammation of the eyes.—Three months after the landing, the physician-general received a memoir on the subject of Ophthalmia from M. Bruant. one of the physicians attached to the expedition *. The observations contained in this short essay are accurate and comprehensive.

M. Bruant begins by lamenting that former medical travellers who have written on Egypt, and who have spoken of the Ophthalmia that prevails there, have been so vague and unsatisfactory in

* The greater part of these communications were first transmitted to M. Desgenettes, physician-general to the army. They were afterwards published among the Memoires of the National Institute at Cairo, and have been since republished by Desgenettes at Paris in 1802, in a work, entitled, "Histoire Médicale de l'Armée d'orient."

their details on the subject, that nothing can be gleaned from their writings that can lead to ascertain its nature, or direct its treatment. Speaking of the probable causes of this affection, he says, "La plupart des malades attaqués d'Ophtalmié nous viennent des postes avancés et des camps; tous ont éte plus ou moins exposés à l'action réunie de la chaleur, et d'une trop grande clarté, qu' on peut regarder ici comme une des principales causes de cette maladie. A' celle-ci viennent s'en joindre d'autres non moins puissantes, parmi lesquelles on doit principalement ranger, d'après Prosper Alpin cette poussière brulante, nitreuse, qui le vent souleve sans cesse dans l'atmosphere. Toutes ces causes agissent en etablissant vers le globe de l'œil un centre d'irritation, et par consequent de fluxion. Comme leur action n'eprouve gueres d'interruption, la maladie qui en est le resultat regne dans tous les temps de l'anneé, et principalement pendant les trois mois qui precedent le debordement du Nil, epoque ou les travaux de la campagne occupent davantage le peuple, et l'exposent plus directment à l'influence des causes dont j'ai deja parté. Voila pourquoi l'Ophthalmie est maintenant assez rare parmi les hábitants du pays, tandis qu' elle attaque un grand nombre de nos

militaires qui soutiennent des marches pénibles, ou qui vivent dans des camps plus ou moins désavantageusement placés *.

From this perspicuous statement we learn that the combined effects of heat, light, and a burning dust continually raised by the wind into the atmosphere, and constantly present during every season of the year, cannot fail to act as a source of irritation to the eye, and are therefore justly considered as powerful causes of Ophthalmia.

The same opinion is supported by Saveresi, another of the French army physicians, who has, more undeniably still, proved the powerful influence of this fine powdery universally pervading matter, by observing, that not even the animals of the country are exempt from diseases of the eyes. " Les animaux ne sont pas plus exempts que les hommes des maladies des yeux; la plupart des chiens sont aveugles ou borgnes, et beaucoup d'ânes, de chevaux, de bœufs, et de chameux ont les yeux tachés ou legèrement affectés †."

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* Histoire Médicale de l'Armée d'Orient, seconde partie, pp. 9 et 10.

† This is a French translation of a small Italian work, entitled, Descrizione dell' Oftalmia di Egitto col metodo

When the exciting causes are thus shewn to be unequivocally present, it is unnecessary to search for any other to account for the phenomena; but even in Egypt Ophthalmia occurs at times, under an ambiguous form, and when its origin is referred to more general and less evident causes. Mr Bruant, the author already quoted, having stated the great and general influence of the causes already mentioned, adds, " Le plus grand nombre des Ophthalmies que nous avons à traiter tient à des causes locales de ce genre: il en est pourtant qui en reconnoissent de plus generales, et par exemple nous en avons observé qui dependoient bien evidemment d'un amas de saburres bilieuses dans les premieres voies. Cette espece n'est pas toujours facile a reconnôitre; souvent les signes qui indiquent la gastricité sont tres obscurs, et ne se developent librement qu' après l'application du premier emetique: ce qui la distinque nèan moins d'une maniere assez sûre, c'est un mal de tête plus ou moins vague, un soif plus on moins prononcée, la teinte jaunâtre de la langue et de la partie enflammé." And again, in speaking of the treatment of this variety, he observes, " Dans

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curativo della medesima. Histoire Médicale de l'Armée d'Oriento, partie seconde, pp. 91 & 92.

l'Ophthalmie dont il est ici question, la gastricité n'est quelquefois qu' un symptôme qui complique la maladie principale, et celle-ci suit son cours ordinaire après la destruction de la premiere."

" Enfin, parmis les Ophthalmies qui se sont presenteés à nous, il en est une troisieme espece qui ne peut pas se ranger dans les deux premieres classes : celle-ci attaque sur tout les personnes delicates, celles qui sont affoiblies par des longues maladies, les convalescents, qu' elle retient souvent tres longtemps dans nôs hospitaux *."

Thus the author admits that although Ophthalmia ought for the most part to be ascribed to local causes, yet that it occasionally occurs, when it is necessary to have recourse to a more general mode of explanation; where he thinks that it evidently depends upon collections of bilious matter in the first passages, although it is extremely difficult to prove this affection of the stomach which does not freely develop itself, until after the exhibition of the first emetic; but that it may however be sufficiently well distinguished by an unsettled headach, a thirst more or less urgent, and a yellow

* Histoire Médicale de l'Armée d'orient, p. 11.

tinge of the tougue, and part inflamed. And yet it is afterwards acknowledged, that this affection of the stomach is often nothing more than a symptom combined with the primary disease, which latter runs its course after the removal of the former. Lastly, he states that among the Ophthalmiæ which fell under his observation, there is yet a third kind, which cannot be classed with the former two species: this latter attacks chiefly persons of a delicate constitution, such as have been debilitated by previous disease, and convalescents, which it confines for a long time to the hospitals.

Notwithstanding this diversity of opinion among these authors, respecting the causes of Ophthalmia in Egypt, they have each assigned a number sufficiently competent to its production. Prosper-Alpinus, who on this subject may be considered, perhaps, as higher authority than either of the three whom I have mentioned immediately after him, considers the hot winds of the desart, while they blow, as a principal cause of Ophthalmia; and in this idea he is supported by Sonnini and others. Indeed their influence is so extensive, and their operation so penetrating, that from a simple mention of their agency, one would be apt to infer,

that the eyes must naturally be among the first victims to their fury. But Savary and Volney, especially the latter, reject this opinion, because, say they, the Bedowin Arabs, who live among sand, scarcely appear to suffer at all from this disease, and have a clear and strong sight. Admitting the truth of this assertion, it is no doubt difficult to assign probable causes for so singular an exception. It may however, be observed, that the wandering life of this curious race of men, while it undoubtedly exposes them to the action of a multiplicity of exterternal powers, tends, at the same time, to render them less easily affected by these external impressions. Besides, acknowledging no superior but the fathers of their tribes, nor being fettered by compulsory adherence to particular forms *, and living according to the simple dictates of primitive nature, they consult conveniency, and the comfort of their feelings, and therefore carefully protect their eyes from external injuries, and by bathing them in cold water, obviate the effects of the dust, and increase their general tone; and thus enjoy that

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* According to Volney they deny that the religion of Mahomet was made for them. Voyage en Syrie et ce Egypte, vol. i.

immunity from disease which the care and solicitude of the European can hardly obtain.

But although, from these circumstances, Ophthalmia may be comparatively rare among the Arabs, we have opposite testimony to shew that they are by no means altogether exempt from it. Renati, in his account of the physical and medical topography of old Cairo, says, that Ophthalmia attacks equally the inhabitants of the city, of the country, and of the desart, without sparing either age or sex. "Cette maladie (Ophthalmia) atta-" que également les gens de la ville, de la cam-" pagnè, et du désert; elle ne respecte ni âge ni " sexe *." Savaresi has a similar observation.— Hence we may conclude that the Bedowin Arabs suffer from Ophthalmia like their neighbours, in proportion as they are exposed to the causes which produce it; and that their comparative exemption from it, arises from their superior attention to obviate the effects of those causes. Similar principles differently modified, will account for those differences in the degree of susceptibility to this affec-

* Histoire Med. partie seconde, p. 74.

tion which are stated by Volney to exist among the different classes of individuals in Egypt.

The practice of sleeping in the open air, has been stated with so many different modifying circumstances that little satisfactory can be drawn from it as a generally operating principle in the production of Ophthalmia. When the temperature of the ambient medium is considerably reduced, or during the prevalence of the Campsin winds, to sleep in the open air with the head uncovered, would infallibly produce disorders of the eyes. And under opposite circumstances, when the temperature is mild, and the air serene, to oppress the head with cloths by weakening and augmenting the irritability of the eyes might render them easily affected by an otherwise salubrious atmosphere.

The influence of the heavy dews of the night, and the humidity of the atmosphere in the neighbourhood of the sea are more obvious, and as Volney well remarks when conjoined with the heat of the sun must be considered as powerful causes of Ophthalmia. But the effect seems to depend in a a great measure upon a rapid alternation of these powers; for neither heat nor moisture singly ope-

rating by themselves appear adequate to the production of ocular inflammation, at least to any considerable extent. Thus among the inhabitants of New Holland, who go almost naked and pass most of their nights in the open air, in a damp variable climate, inflammation of the eyes in a very rare occurrence *. And from the cruel system of management observed among the negro slaves in Africa, their eyes are hourly exposed to the effects of a burning sun; and yet in enumerating the diseases, with which those unhappy mortals are afflicted, Ophthalmia is not included among the number †.

The nitrous powder which is said to be so abundantly diffused through the atmosphere, and to be so pernicious in its effects upon the eyes, seems but of doubtful agency. From the name and from the proofs which Volney has enumerated of its existence, it appears evident, that he supposes saltpetre to be dissolved or suspended in the atmosphere, and to act chemically on the eyes. But nitre has never by any chemical analysis been detected in atmospheric air, nor from the known

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* Labillardiere's Voyage in search of La Perouse.

† Park's Travels in Africa.

properties of that salt, can any such combination be with propriety inferred. It was indeed ascertained by the French chemists in their experiments on the most economical mode of procuring and purifying nitre by crystallization, that in the evaporation even when the heat was not very considerable, a portion of the nitre was always raised along with the water. But although a comparatively low temperature, at which this took place, it was much higher than occurs even in Egypt, and therefore it appears very doubtful whether the heat of the sun singly be sufficient to enable water by the process of spontaneous evaporation to carry nitre along with it into the atmosphere. Neither this salt nor the muriate of soda are sensibly changed by exposure to atmospheric air.

In India, in South America, and in Spain, nitre is produced naturally, and it is artificially prepared in the large way in France and in Germany; but it does not appear that the people employed in manufacturing it are more harrassed than others with disorders of the eyes.

The nitrate of lime is very deliquescent, and it abounds in Egypt. When the heat of the sun is in-

tense and evaporation is rapidly carried on, it is possible that a portion of this salt may be raised along with the watery vapour into the atmosphere, and may in this way become a temporary cause of Ophthalmia. But no analysis has discovered its presence in the atmosphere.

But although none of the neutral salts dispersed over the soil of Egypt, appears capable of acting through the medium of the atmosphere as exciting causes of Ophthalmia, yet the surface of the ground is every where covered with a finely attenuated powdery matter, which is readily raised by the wind, and may be justly considered as one of the most permanent and generally operating causes of ocular inflammation in that country.

Savaresi has, in part, established this point by experiment. He observes, that clay, which has alumina for its base, and calcareous earth, which is a combination of lime and carbonic acid, are two earthy substances widely diffused over the soil of Egypt; and that these substances and their bases produce inflammation of the eyes, he thinks is sufficiently evident from the following facts:— Having powdered them, he introduced them into

the eyes of different dogs, who became almost blind the day after the operation, while the nitrate of potash, applied in a similar manner upon other dogs, occasioned no inconvenience whatever *.

To these should be added sand, or silicious earth, of which there is an abundant stock in Egypt, and which being altogether insoluble in the animal fluids, must act as a centre of irritation whenever it is applied to the eyes.

Many of these causes of Ophthalmia occur no doubt in other places, but there seems to be a greater assemblage operating in Egypt than is perhaps to be met with in any other country on the face of the earth. And when to these are added a total inattention to cleanliness, the constant use of a head-dress which affords no protection to the eyes against external impressions, and the prevalence of that gross superstition which refers every effect of ignorance to the unerring degrees of an all-ruling providence, it is easy to conceive the production and propagation of disease to an unbounded extent.

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* Histoire Médicale de l'Armeé d'orient, partie seconde, p. 93.

But these external causes do not operate with equal intensity throughout the whole year, and at certain seasons they appear to be altogether quiescent. The spring and the winter are stated by Prosper Alpinus to be temperate and healthy, and to be attended with a serenity of the air; and yet, during the winter at Alexandria, when the steady and bracing breezes from the north prevail, Ophthalmia is very frequent, and it rages at Cairo during every season. This author, however, has recourse to the nitrous dust which he supposes to be so widely diffused through the atmosphere to account for its appearance, at times, when its more obvious causes are absent. But from what has been already said, the influence of such an agent as an efficient cause of ocular inflammation may be safely denied; and it may be assumed, as a very probable opinion, that the extensive range of virulent Ophthalmia which its known and obvious causes have generated during the season of their prevalence, are sufficient to maintain and progagate it after these powers have ceased to act. This opinion is strengthened by the observations of Bruant, although neither he nor Prosper Alpinus, nor any one of the French physicians that were in Egypt, ever suspected the existence of a contagi-

ous principle in the production of disorders of the eyes.

Bruant has stated, that Ophthalmia occurred when exciting causes had not been known, nor even supposed to have operated. One variety he considers of a bilious nature depending on a certain state of the stomach and intestines. Such a connection has been noticed, and it is the Ophthalmia *consensualis* of Plenck. But in this instance it appears under an ambiguous form, and the affection of the alimentary canal seems to be rather an accidental attendant than a primary cause of the disease. In some cases, the presence of bile was doubtful until after the exhibition of an emetic, which of itself at any time is sufficient to emulge the biliary ducts, and occasion an abundant flow of bile into the stomach.

The other species of Ophthalmia taken notice of by this author is considered as an idiopathic affection attacking individuals peculiarly predisposed, of particular constitutions, and convalescents from other diseases, who had remained in the hospitals, and who are surely very little exposed to the influence of external causes; in this latter instance,

Ophthalmia appears to obey the laws of contagious diseases.

That Ophthalmia should propagate itself in Egypt by contagion, seems a necessary consequence of the great extent of morbific matter generated, and the peculiar malignity of the disease. Yet when so many obvious sources of irritation prevail, the discriminating shades elude our perception, and prevent the attainment of that precision of arrangement, and accuracy of information, so desirable in every philosophical research.

PART V.

ALTHOUGH the opinion that Ophthalmia is frequently propagated by the operation of a specific contagion, has of late been generally received, yet as several objections have been made to such an opinion, it becomes necessary, in an inquiry, the express object of which is to endeavour to ascertain the point, to examine these objections with attention, in order to see whether they really tend to invalidate the position.

It has frequently been urged as an argument against the contagious nature of this affection, that it does not always manifest itself to be so in its effects upon sound bodies subjected to its influence. Thus it is said, that the plague, small-pox, measles, and other contagious diseases almost always attack persons that come within the sphere of their operation, but that the same is not observed to occur in Ophthalmia.

In the instances already mentioned of those regiments at Gibraltar which received Ophthalmia

from having had communication with those labouring under it, we have seen that the most perfect health was no security against its attacks; and that it seemed to extend itself under every variety of circumstance. The observation seems to have been suggested from the circumstance of it having been observed, that on the arrival in England from Egypt of some individuals affected with Ophthalmia, this disease had not been communicated to others, although frequent intercourse had taken place among them. But from what has been already stated, it appears, that a few cases of Ophthalmia do not appear in general sufficient to extend it widely to others; and in the particular instances alluded to, the disease must have existed in their persons for several months, both in the country where it first arose, and on the passage to England. This duration might tend materially to weaken the energy of the contagious power when not aided by collateral circumstances, and such an Ophthalmia was in all probability the effect then of extreme local debility, the consequence of repeated relapse.

Thus, when the system, or any particular organ, has been long accustomed to a certain train

of motions in disease, a morbid association ensues, and an irritative action is maintained purely from a species of habit. This is particularly exemplified in that disagreeable cough which children suffer long after the hooping cough has lost its power of infection. The same is observable in that disagreeable sequela to virulent gonorrhea denominated gleet, where a matter is discharged from the urethra not differing in its sensible qualities from the first, but which is not infectious, and which returns at intervals for many years upon the slightest excess, when the virus which originally produced it had long been destroyed.

The systems too of individuals differ widely in their susceptibility of being affected, even when exposed to the agency of the strongest contagion. We do not always succeed in imparting the small pox even by a direct introduction of the virus into the body, and the force of any contagion, operating by its own power, is, generally speaking, in proportion to its age. It is therefore evident, that in cases where this Ophthalmia had been extremely violent, that the vessels would lose their tone from excess of action, and being continually gorged with blood, exhibit in part the symptoms of the primary affec-

tion, when, in reality, the whole depended upon local debility. But this objection, if it did ever possess any force, it could have been only at the commencement, when perhaps a variety of circumstances might have concurred to prevent a few isolated cases from becoming a source of general disease.

Another objection, which has been urged against the contagious nature of Ophthalmia, is, that its sudden appearance, often apparently in consequence of one person looking into the eye of another, is incompatible with the idea of a contagious power, contagion requiring a considerable time to produce its effects upon the body after its first application to it.

But how can we ascertain with precision, the period at which any contagion begins to operate, when perhaps its primary action has been insufficient to produce such a change on the functions of the body as to indicate its presence? Analogy informs us that no power capable of affecting the human frame can be applied to it even for a moment without producing some effect. This holds with

respect both to the operations of the mind and to the functions of the body, although we may not have been conscious at the time of the successive changes which had taken place. For, if the attention has been interestingly engaged in any particular train of thought, or if the body has laboured under any acute affection, every impression, whether of an intellectual or of a corporeal nature, if it be inferior in intensity to the one then present, will pass unobserved; and we shall only at last be convinced of its having existed by some collateral proof, or some obvious effect which it has left behind it.

It is true that in the contagious diseases which most frequently occur, there does usually elapse a considerable time between the period when the person has been exposed to the noxious power, and the actual appearance of disease. But every contagious disease is governed by its own laws, and those of Ophthalmia have not yet been so completely explored as to enable us to say whether the property of affecting at once may not be one peculiar to it. Nor are there wanting numerous instances where these very contagious diseases have departed from the laws which usually regulate them, and instead of an interval of days from

the period of exposure to infection, have occurred almost instantaneously, where no other cause could be assigned than the penetrating influence of this subtile agent.

It is probable too, that a considerable difference may take place in the length of interval from exposure to infection and the production of disease, cæteris paribus, between those contagions which act upon all the functions at once, as typhus fever, or small-pox, and one which seems to determine its action to a particular organ, as is the case with Ophthalmia.

There is no organ in the body on which impressions can be made more easily than on the eye. From its acute sensibility, and the peculiar delicacy of its structure, there subsists an almost immediate communication between it and every surrounding object; and agents, which are perfectly innoxious when applied to the other parts, cannot approach the eye for an instant, without deranging its functions.

It may, therefore, be fairly inferred that every noxious power which is capable of inducing disease

ultimately in the system, commences its morbid action from the first moment of its application to the body; but that its sensible influence on the functions, or, in other words, the production of disease, will be in proportion to its own innate strength, and the degree of susceptibility to impression then existing in the organ to which it is applied.

Among the objections to the opinion, that Ophthalmia is a contagious disease, may be included, the substitution of other principles to account for the phenomena, as referring it to the influence of sympathy or imagination.

Sympathy in a medical sense, strictly speaking, means the communication of painful or pleasurable sensation from one organ to another of the same body. Thus the uterus sympathizes with the mammæ, the head with the stomach, or, in other words, the one is affected by impressions made upon the other. These communications are supposed to take place through the medium of the nerves; but with the laws that regulate this species of sympathy we are but little acquainted. In a more general sense, sympathy implies the quality of being affected by the affection of another, or a

participation in the pains and pleasures of another. Thus, in contemplating any object of joy or of grief, we enter ourselves into the situation of the person who happens to be the subject of our contemplation; and from the conception which we form of what we should feel in his situation, we have a momentary consciousness in our own frame of the existence of the distress which we commiserate, or the joy which we delight in. Hence the lively interest which we take in the varied representations of the drama, where the happiness and distress of our favourite equally engage our affections.

Yet in all this I think there is a voluntary effort of the mind, attended with a certain degree of satisfaction, even when distress itself is the object of our sympathy. The sufferer on such occasions deeply interests our feelings; we are flattered with the idea of being alive to such amiable emotions; his distress we consider as altogether undeserved, and we conceive that we alleviate it by a participation in it. But if the individual be suffering the punishment due to the commission of a crime, although his distress may be perhaps more poignant than it could have been in any other possible situa-

tion, yet our feelings, on contemplating it, are very different from what they were on the former occasion.

If sympathy, therefore, implies a voluntary participation in the pains and pleasures of another, and if this participation be accompanied with a certain degree of satisfaction, I think it follows, that we cannot sympathize with objects of horror or disgust, and such I conceive disease to be under any form. There is an insuperable repugnance in human nature to every species of corporeal pain; and we never behold disease in another person, without a self-congratulation at our own exemption, and a hope that we may escape it altogether. If this view be correct, it does not appear that Ophthalmia can be propagated by sympathy.

The power of the imagination in producing certain morbid states of the system is often very great and striking. It is finely illustrated in those examples of the effects of animal magnetism exhibited at Paris, the fallacy of which was detected and exposed by Dr Franklin, Lavosier, and others *.

* Report of the French Commissioners to examine into the truth of Animal Magnetism.

Many of the individuals who were the subjects of these experiments firmly believed, that when certain substances were directed to their bodies, that they felt a burning pain in the part to which the magnetic influence was supposed to be directed; and this they conceived to be occasioned by the pain or disease passing out of the body at that spot. This sensation was felt whatever was the nature of the rod employed, provided that the patient was impressed with a belief in its magnetical powers.

The effect which the imagination has upon the stomach is very obvious. The belief, for a moment, that we have swallowed any thing disgusting, immediately excites an inclination to vomit; and this disposition is easily excited even at a distant period by the occurrence of some associating principle. That therefore, on some extraordinary occasions the imagination may be so strongly exerted as to disorder the functions of the body, and at last to induce disease in it, cannot be denied; but such an occurrence always implies a voluntary effort on the part of the individual, and cannot be supposed to exist without his consciousness. How will it then account for the extensive appearance of this disease, where no such effort of volition has

been exerted, and where the person concerned was ignorant of its effects? Such operations of the imagination are confined entirely to the class of diseases denominated nervous, where the frame is keenly alive to every impression. But that any individual can generate in his system, by the mere force of his imagination, any particular idiopathic disease, by a simple contemplation of it, seems to be altogether impossible; for that very disease has been produced by efficient causes, over which this power can have no controul.

I have thus, in conducting this inquiry into the contagious nature of Ophthalmia, stated the facts in support of that opinion which have occurred to myself, or which I have received from others. Although decidedly favourable to such an opinion, I have neither intentionally suppressed, nor in any manner disguised the force of any argument which has been urged against it; but have examined it with the impartiality which it deserved. To ascertain the truth has been my object in this investigation, and my peculiar ideas can have no weight, but in as far as they shall be supported by the observations and candour of succeeding inquirers. Yet even at present the adoption of the opinion

that Ophthalmia is a contagious disease may have its use. It may lead to the energetic prosecution of measures which experience has shewn to be useful in weakening the force, if not eradicating altogether other contagious diseases; and nothing should be omitted which has for its object the removal of a cause which tends to the destruction of an organ from which we derive such extended and varied enjoyment.

If the labours of others shall discover that I have been mistaken in my views, I shall gladly hail the consolation which such a discovery will convey, and be among the first, by an acknowledgement of my error, to remove from the minds of my countrymen that apprehension and solicitude which I have been so anxious to instil. But until that shall take place I must claim the privilege of concluding this part of my subject in the words of the poet:

——— Si quid novisti rectius istis,
Candidus imperti; si non, his utere mecum.

A

TREATISE

ON

OPHTHALMIA.

CHAPTER I.

HISTORY OF OPHTHALMIA.

By the word Ophthalmia, I understand, every state of the eye and its appendages where there exists pain, and a greater degree of redness than natural.

I am aware that this definition is more general than has been commonly received, but not more so than the detail of its varieties includes; and a comprehensive generic term, which violates no established principle, is extremely convenient, as it saves unnecessary subdivision and much repetition.

St Yves, Plenck, Trnka, and others, have divided Ophthalmia into a variety of species, and have detailed symptoms peculiar to each. They have founded several of these distinctions on the belief that the disease in certain cases was confined to particular parts, and that the cause accidentally inducing it essentially changed its nature. But although it be modified in a few instances by the lattter of these circumstances, the former are neither so uniform in their occurrence nor so permanent in their operation, as to justify so extensive a division; and demand, moreover, in the practitioner an unattainable and almost superfluous nicety of discrimination.

Scarpa's division is more comprehensive. He divides Ophthalmia into acute and chronic. In the former, there is an excess of vascular action; in the latter, the vessels are in a state of debility. But he uses the word chronic in rather too general a sense, implying indiscrimately that debility and turgescence which succeed to violent action, and that constant state of irritability which is occasioned by a scrophulous or venereal taint on the system.

As simple, and perhaps as natural a division as any, may be that into idiopathic and symptomatic Ophthalmia. In the former, Ophthalmia is considered as a primary disease induced by any of the various powers which affect our bodies. In the latter case, it is viewed as a symptom, or rather an effect of some other affection whose presence has been ascertained. Strictly speaking, perhaps, the general affection inducing it should be ranked among the number of its exciting causes; but while some diseases seem to operate merely as accidental causes, there are others which by their constant presence in the system modify its symptoms, and determine its duration. Small-pox and measles are examples of the former kind, and may therefore be referred to the general head of causes of Ophthalmia; lues venerea and scrophula are examples of the latter kind, and demand a separate consideration.

SECTION I.

OF IDIOPATHIC OPHTHALMIA.

Idiopathic Ophthalmia attacks every age and sex, and like other diseases varies very much in its degrees of severity. Even when so prevalent as to appear epidemic, the symptoms are at one time remarkable for their comparative mildness, and at another for the violence and rapidity of their progress. Hence, for perspicuity sake, the general disease may be considered under the two forms of *Mitis* and *Gravis*. They vary only in degree, but in each there are two distinct stages. In the first stage there is an increased action of the vessels of the part, characterized by all the symptoms of inflammation. In the second stage there is obscure pain, turgescence and debility, the consequence of this previous excitement.

Ophthalmia Mitis.

The patient first complains of a slight degree of tension over his eye, attended with uneasiness when it is hastily moved. It feels itchy, and he rubs it with his finger, without experiencing any

relief. He conceives that something has got into it, which he in vain attempts to remove. If the eye be now examined, the tunica conjunctive appears to be streaked with red lines, and the eyelids to be somewhat swelled. An increased flow of tears frequently succeeds, accompanied by a painful sensation of heat. At times, however, there is no discharge of tears, but the feeling of heat is seldom absent. Drooping the head, fixing the eyes long upon any one object, or exposing them to heat, light, or the wind, aggravates the pain and augments the discharge.

As the disease advances, a head-ach comes on, which is most troublesome towards evening; vessels begin to shoot out, where they had never before been suspected to have existed, the whole tunica conjunctiva appears of a florid colour, and generally at the part where the uneasiness and itching are the most troublesome, the inflammation is found to be the most considerable. Small elevations at this time appear upon the conjunctiva, and the discharge becomes of a thicker consistence. The sensibility of the eye is greatly increased just before, or when the disease is at its height, so that the faculty of vision is then uncommonly acute. But

as the disease advances, the eye becomes dim, and at last objects are seen as if through a mist.

In this way, with a gradual progression, the inflammation advances generally for the space of a day or two, when it begins to subside, and the disease then passes into the second stage. The pain now abates, a sense of weight ensues, the discharge diminishes, the colour of the vessels changes from a bright red to a deep purple hue, and, by care and attention, the patient is restored in the course of a week to his former health.

Ophthalmia Gravis.

In this variety, the symptoms are more strongly marked; sudden in the invasion and rapid in their progress, beginning generally at night or towards morning, without the slightest preceding uneasiness. The patient feels frequently, all at once, as if something were rolling over the ball of the eye, attended with a troublesome sense of itching. This is soon succeeded by a copious discharge of a watery fluid, so acrid at times as to scald those parts of the face over which it flows, and which from its quantity so distends the eye-lids, particularly during the

night time, as not to admit of their being opened, but with the greatest difficulty. Indeed the eye-lids often possess an uncommon degree of irritability, becoming inverted in some instances, when pressed with the fingers, and in others the orbicularis muscle is so spasmodically affected, that if a view has not been obtained of the eye at the first attempt to examine it, it becomes extremely difficult to obtain it for some time after. On examining the eye, the whole tunica conjunctiva appears of a bright scarlet colour, without a possibility of tracing the individual vessels on it; and even at this early period of the disease, in some instances, interspersed with small spots of extravasated blood. In the course of one day, frequently in the space of a few hours, a discharge of a purulent like matter * takes place; small elevations of a yellow colour begin to rise upon the conjunctiva, which, in a short time, exhibits a spongy appearance, and the eye-lids are swelled and thickened in a prodigious manner. A head-ach, at first slight, becomes constant, and in some instances so violent, as to induce a degree of delirium. Sleep is disturbed,

* Although of a purulent appearance, this matter does not present the properties of ordinary pus. It is a viscid exudation, the true production of mucous membranes in a state of inflammation.

the pulse is accelerated, and such a degree of general fever comes on as to confine the patient to his bed. These symptoms are uniformly aggravated towards evening, and remit in the morning.

In this way the disease goes on with various duration; but generally about the morning of the third day, the inflammation has attained its acmé, constituting what may be called the first stage of the disease. The keen acute pain now in a great measure subsides, while a sense of weight succeeds, with a peculiar sensation of weakness, though not of pain, on any exposure to light. The vessels on the conjunctiva appear gorged with blood, and of a colour inclining to purple. The watery effusion diminishes, but the purulent discharge which comes chiefly from the internal membrane of the eye-lids is more copious, and becomes thicker in its consistence. The spongy appearance of the cornea gradually wears off, and it exhibits marks of depression in it, as if it had been scraped with an instrument. The redness, swelling, and tension by degrees abate, and in the course of twelve or fourteen days from the first attack, the patient usually recovers, but a cloudiness of the eye, and a certain weakness of sight remain for some time afterwards.

But when from the violence of the attack, or the carelessness of the patient, the disease passes the usual period of decline, and the inflammation goes on increasing, the eye and its coverings are more severely affected, and the termination of the disease is absolutely uncertain. A deep seated and pungent pain is felt in the ball of the eye, the cornea appears cloudy and more prominent than natural, and when the patient fixes his eyes upon any object, he complains of indistinct vision, or as if he saw objects through a vail. The pain is not confined to the ball of the eye, but extends to the temples and forehead, causing an obstinate and distressing headach; and the inflammation still continuing, further effusions of blood occur, and preternatural membranes appear to be formed upon the conjunctiva, proceeding from the circumference of the eye towards the cornea, which they sometimes cover. Lastly, collections of purulent matter are formed in various places, and the more delicate parts subservient to vision are either destroyed or greatly impaired, and on some occasions the bursting of the cornea permits the protrusion of different parts and staphyloma is formed. Ulceration too takes place at the surfaces of both eye-lids, and the tension and tumefaction are often

so great as to keep the eyes shut for several days; and when, from the effect of emollient applications, the patient is enabled to separate the eye-lids, the latter appear as if glued to the ball of the eye; and in this manner it appears those preternatural adhesions are formed, which frequently terminate in the loss of sight.

On some occasions the inflammation is more languid in its progress.—The vessels on the conjunctiva do not acquire the florid colour which a more vigorous action produces; the eye-lids appear œdematous, the sight is weak, and the pain is seldom acute. In such cases the flow of tears is often very abundant, but the purulent discharge is less copious, and the disease is of very uncertain duration.

Relapse, especially when the disease has been violent, is a frequent occurrence, and is induced by the slightest irregularity. In these instances, the symptoms of the first stage are renewed, but with diminished energy, and generally with shorter duration. The loss of vision, which is frequently the consequence of these repeated attacks, seems in many instances to depend upon a gradual thickening or opacity of the cornea, occasioned by repeat-

ed effusions of coagulable lymph; and no doubt in others from blood extravasated between the more internal membranes, particularly the choroid and sclerotic coats.

Such are the symptoms of general Ophthalmia, and such in the majority of instances is their natural order of progression. The first variety is meant to apply to the history of the common Ophthalmia of this country, as it usually appears; the second variety is more immediately descriptive of that modification of the disease, which by way of distinction has received the appellation of Egyptian Ophthalmia. Each no doubt admits of a wider range; but it would be endless and impossible to delineate every minute shade of difference which the accidental occurrence of an exciting cause, or the peculiar idiosyncrasy of the individual might give rise to. In both, the conjunctiva is the chief seat of the disease; and although, no doubt, on some occasions, we meet with aggravated instances even in the ordinary Ophthalmia, yet they are more slow in their progress, and but rarely have the effect of destroying sight. The other is at all times severe in the degree of inflammation, and often very rapid in its termination; shews a continual disposition to relapse, and is in some measure characterized by a

tendency to form the membranous expansion denominated Pterygium, which, encroaching upon the cornea, impedes vision.

Both eyes are seldom affected with Ophthalmia at the same time. The disease usually begins in one eye, and, after continuing a short time, passes to the other. In some instances, it is confined entirely to one eye; but this occurs chiefly, when the inflammation has been pretty smart in the eye first affected; but if it ceases suddenly in one, it invariably attacks the other.

Savaresi observed that the left eye suffered more than the right, and that it was more frequently the seat of Ophthalmia.—" J'ai attentivement observé dans le cours de cette maladie que l'œil gauche est plus affecté que le droit *." Mr Larrey, on the contrary, states that the right eye is the most frequent victim of this disease :—" J'ai observé aussi que l'œil droit etait plus gravement affecté que le gauche †;" and suggests, that among the French

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* Histoire Médicale de l'Armeé d'Orient, partie seconde, p. 90.

† Relation Historique et Chirurgicale de l'Expedition de l'Armeé d'Orient en Egypte et en Syrie, p. 24.

soldiers in Egypt it might be owing to the habit of lying down to sleep on the right side, by which means this part first receives the impression of the cold from the wet ground. Such a contrariety of result in the observations of these gentlemen is the more surprising, as both of them were attached to the same expedition, and both, in all likelihood, visited the same patients: for it is not from the event of a few particular cases that fell under their individual management respectively, upon which they found their opinion; but upon the general event of Ophthalmia as it appeared throughout the whole French army *.

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* From not having met with Mr Larrey's book until after the Inquiry had been printed, I had not an opportunity of stating, in the section on Egyptian Ophthalmia, his views of the causes, and some general observations respecting it, and here they would be in some measure misplaced. They are nearly the same, however, as those stated by his colleagues. There is one observation which appears to me of some importance;—that many individuals who had escaped Ophthalmia in Egypt, were almost immediately seized on their return to France with blindness, more or less complete, which he thinks should be ascribed to a paralysis of the organ of vision produced no doubt by the sudden removal from the very hot climate of Egypt to that of France, in a very unfavourable season. P. 33.

I confess this does not appear to me to be a satisfactory explanation of so singular an occurrence. To some individ-

The duration of Ophthalmia depends in a great measure upon the seat and kind of the inflammation. When the external marks of inflammation bear little or no proportion to the pain complained

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uals the passage from Egypt to France might have been rapid, but it could not have been so to all. In general, it is not accomplished in less time than three or four weeks, unless by single vessels, and in these cases the change is comparatively slow and progressive. Nor would it be easy for Mr Larrey to explain the manner in which this change of climate prodnces the effect which he ascribes to it. The observation itself, is stated rather obscurely, nor are the accompanying circumstances mentioned. But from the detail of one case immediately succeeding the observation, it appears that the phenomena of violent Ophthalmia preceded the blindness. If this were uniformly the case, it corresponds exactly with what has occurred in England since the return of the army from Egypt, and this renewal of the disease may be ascribed to the influence of contagion.

The success which Mr Larrey states to have attended his treatment of Ophthalmia in Egypt was very great indeed—of upwards of 3000 individuals who were attacked with it, it was not fatal to the sight of a single one.—" Il en est resulté que sur trois mille et quelques Ophthalmiques, il n'y en a pas eu un seul qui ait perdu la vue." P. 33.——But here again he is at issue with his learned colleague Savaresi, who gives a very different account :—" La terminaison quand le guérison ne s'anonce pas, est suivie de l'amaurosis, de l'obscurcissement de la vue, ou de la perte entiere de l'œil, après avoir lutté contre les remedes les plus forts et les plus actifs."—Hist. Méd. partie seconde, p. 91.

of in the ball of the eye, and when head-ach and intolerance of light are urgent and constant, we have just grounds to apprehend that the disease will have neither a speedy nor a safe termination. The particular parts most severely affected in these instances, it is difficult to ascertain. At one time the iris appears unusually red; at another, the choroid coat appears to be principally affected; but it is more likely that they are all more or less involved, and that in the more aggravated forms of the disease, the retina itself is deeply concerned. When the inflammation is rapid, without being very violent in its progress, and the colour of the vessels on the conjunctiva has been florid from the beginning, the event is seldom unfavourable. But when it comes on slowly with a succession of remissions and exacerbations, which occur chiefly in phlegmatic or scrophulous habits, the management is tedious and the cure is uncertain. Besides the seat and kind of inflammation, the duration of Ophthalmia is modified by other circumstances. A smart diarrhæa accidentally supervening, or having been induced by medicine, frequently arrests its progress. I have known a paroxysm of gout remove an Ophthalmia which had continued some time.

Of the Psorophthalmia.

The eye-lids are often from the very beginning of an attack of Idiopathic Ophthalmia, the parts chiefly affected, and it is in such cases that ulceration of them most frequently occurs. Indeed, even where the attack has been but a short one, I have seen it exclusively confined to the eye-lids, as in these cases where the disease was general in its occurrence, and supposed to be produced by a contagious principle. Hence it appears to me that Mr Ware is perfectly correct when he says, that this modification of the disease is not necessarily connected with a scrophulous diathesis, although it may be aggravated occasionally, or even induced by the presence of scrophula in the system. Nor is Psorophthalmia confined to any particular temperament, although I think that its occurrence is more frequent among those who are considered of a phlegmatic, than persons of an opposite habit.

This variety of Ophthalmia has been well defined by Dr Cullen, under the name of Ophthalmia Tarsi, and indeed his definition comprehends all its phenomena. His words are " Ophthalmia

"(Tarsi) cum tumore, erosione, et exudatione "glutinosa tarsi palpebrarum *." Plenck and others have denominated it Psorophthalmia, and by this name it is now more generally known. The eye-lids become stiff and painful when moved, their internal surfaces appear streaked with turgid vessels, and there is a copious secretion during the night of a thick glutinous matter. Ulceration soon follows, there is a constant discharge of a puriform kind, and they assume a livid and disagreeable appearance, and if due care be not taken to check its progress, the Ophthalmia Tarsi remains for many years.

St Yves considered this modification of Ophthalmia as induced by the small-pox. It, no doubt, may on some occasions be induced by the effects of the variolous contagion, but the same phenomena occur when no such disease has preceded its appearance. His view of its nature and causes however appear to be perfectly correct. When treating of this subject he observes, "that those pustules on the edge of the cartilage of the eye-lids, which penetrate between the cilia

* Gener. Morb. tom. ii. p. 89.

and their internal surface, do not cicatrize on account of the acrimonious serosity which continually moistens the eye; hence follow ulcers which last sometimes several years, and even during life, if proper remedies be not applied." And in the following paragraph he says, "the ulcers which occur on the eye-lids in consequence of the small-pox are of two kinds; one kind is accompanied with a fungous flesh, which retards the cure, until it be altogether removed; the other kind, on the contrary, penetrating into the substance of the glands which furnish the acrimonious matter, alters this secretion, which contributes not a little to perpetuate the ulcers, by attaching itself as a kind of glue to their surface; and which at last occasion the hairs to drop off *."

Mr Ware states partially the opinion of St Yves, and then proceeds to detail what he considers as his own peculiar ideas on the subject. His words are, "And in cases of this kind (when the eye-lids alone are affected), I consider the ducts of the ciliary glands, as really ulcerated: whence it a-

* Nouveau Traité des Maladies des yeux, par M. De St Yves, cap. vii. p.p 161 & 162.

rises, that the oily soft fluid, secreted by these glands, being mixed with the discharge from the ulcers, is changed into an acrid humour, which quickly forms into a hard adhesive scab. Nor will the complaint stop here; for the scab lodging on the orifices of the ducts, by the irritation it occasions, will necessarily spread the humour, till it has infected the whole internal edge of the lids *."

This statement does not appear to me to differ from that given by St Yves. Indeed it is essentially the same. The ulceration of the ducts of the ciliary glands is a necessary and unavoidable consequence of an ulcer affecting the gland itself, from which the duct issues.——St Yves has also taken notice of the adhesive scab formed by this glutinous matter, and the effects of the acrimonious matter discharged from these ulcers. But the assumption that a soft oily fluid secreted by these glands, by being mixed with the discharge from the ulcers, becomes changed into an acrid humour, inspissating into an adhesive scab, is perfectly gra-

* Chirurgical Observations relative to the Eye. page 107.

tuitous, since it is equally, if not more probable, that the admixture of a bland oily fluid with the acrimonious matter of an ulcer, instead of increasing the acrimony of the latter, would tend directly to mitigate its virulence.

It is in this variety of Ophthalmia, more frequently than in the scrophulous affection of the eye-lids, that the disagreeable turning outwards of the eye-lids termed Ectropium occurs. This extraversion increases the pain by exposing the parts more immediately to the action of every irritating cause; and it is attended with an irksome sensation of tightness over the cheek, the skin of which appears as if contracted or drawn downwards. It seldom happens that both eyes are affected in this manner at the same time. Most commonly one only suffers, while the other remains in perfect integrity; or when both eyes have been affected at the commencement, one of them shall recover.

Of the Puriform Ophthalmia which attacks new-born Children.

There is a severe, and as far as I know an idiopathic variety of Ophthalmia which attacks children

soon after birth. The tunica conjunctiva of both eyes first becomes red, but almost immediately after the eye-lids swell to such a prodigious height, as in many instances to prevent their being separated. The child cries incessantly, and appears to suffer the most excruciating pain. In the space of an hour or two, a discharge of a thick yellow purulent like matter takes place, which, however, for more than a day has little or no effect in moderating the violence of the inflammation; the pulse is quickened, and frequently as observed by the accurate Scarpa, conjoined with these symptoms, there occurs a vomiting or diarrhea of a bilious fœtid matter *.

In the course of a day or two, the discharge, although constant, becomes thinner, and the swelling begins to abate. Upon separating the eye-lids, they appear to be thickened and of a spongy texture. This increase of size and change of structure force the tarsi outwards, giving them an everted appearance. The conjunctiva, which may now be seen appears a fungous mass, and the cornea looks

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* Traité Practique des Maladies des Yeux, tom. ii. p. 273. I have not been able to get a sight of the Italian original.

heavy and dim, nor can the infant tolerate the admission of the smallest portion of light. If fit remedies be not speedily had recourse to, and if, instead of declining, the inflammatory stage be renewed, the cornea becomes perfectly opaque and vision is destroyed. Indeed, under the most favourable circumstances this affection demands from the first unremitting attention.

This modification of Ophthalmia very much resembles in its symptoms that malignant variety of the disease which appears to be a consequence of a suppressed Gonorrhea, and which shall be hereafter considered. Like it, the symptoms are sudden in the invasion, and rapid in their progress; the tumefaction is confined chiefly to the eye-lids, and the purulent discharge is abundant from the beginning. But why this aggravated form of the disease should be peculiar to children, and to them too at so early a period of life, I confess I am unable to explain. Neither in the cases that have fallen under my observation, nor in those related by others, have I been able to trace any uniform efficient cause of this affection. I have not remarked it as being peculiar to the children of parents of any particular constitution; but I think

there is little doubt but that it is connected with a loaded and oppressed state of the bowels. This appears to be indicated by the quantity, blackness and fætor of the stools which usually accompany it; and hence it is extremely probable that a torpor of the alimentary canal, and the protracted stay of fæculent matter in it may predispose to this affection.

Of Intermittent Ophthalmia.

Ophthalmia sometimes puts on an intermittent appearance, and is pretty regular in the recurrence of its paroxysms. It seldom lasts above a few hours, and comes on commonly with an interval of three or five days, although in this respect it is subject to very considerable variation, generally, however, with a regular interval. The fit commences with a dimness and watering of the eye, accompanied by a slight fever, without any remarkable degree of redness of the eye; and the pain, which is often very acute and of a burning kind, is felt chiefly in the ball of the eye. It is a very distressing complaint, and frequently continues for many years, obstinately resisting every remedy, and at last terminating in amaurosis.

There is a curious instance of periodical blindness which seems referable to this head, related by Dr Samuel Pye, in the *Medical Observations and Inquiries*, of a person becoming one afternoon suddenly blind, and losing the use of his limbs. He recovered both with the rising of the sun, and lost them again when he set. The blindness was complete during the attack, for the patient could not see the light of a candle held close to his eye.—This periodic and daily affection continued for the space of two months, and then vanished of itself, leaving the eye perfectly sound.

SECTION II.

OF SYMPTOMATIC OPHTHALMIA.

Although various diseases give a predisposition to Ophthalmia, yet there are only two which can be said uniformly to modify its symptoms, and on many occasions to determine their duration. These are *Scrophula* and *Lues Venerea*.

Of the Scrophulous Ophthalmia.

The nature of that peculiar structure of frame, which has received the appellation of Scrophulous, has long been the subject of fruitless investigation; and like every other effect of hereditary configuration, its efficient causes have hitherto eluded the research of physicians. The unsuccessful result of such inquiries, is no doubt in part to be ascribed to the obscurity in which the subject itself is involved; and partly also, to the circumstance that men are in general more fond of indulging in the speculations of their own minds, than anxious to collect and arrange facts, the application of which must be left to others. For since the preconceived notion of lentor in the fluids, and the far-fetched analogy of a predominant acid in the system, have been exploded, and a careful attention paid to the morbid affection of certain parts connected with the scrophulous diathesis, our views of the subject have been more correct, and our treatment of the disease more successful.

It would be altogether superfluous in this place to detail the progress of scrophula as a separate

disease, I shall endeavour merely to point out the scrophulous diathesis, and examine how far it modifies Ophthalmia.

This diathesis or temperament is marked by a general flaccidity and mobility of fibre. The individuals are easily excited by impressions of every kind, and are soon exhausted by any unusual exertion. In general, the hair is fair and the eyes are of a light colour; the cheeks are florid, while the other parts of the face are rather white and pale; and the upper lip is observed to be rather more tumid and prominent than in persons of an opposite complexion, giving a peculiar cast of feature to the whole countenance. But as characteristic a mark, perhaps, as any, is a remarkable smoothness, and transparency, of the skin all over the body.

A frame so constituted, is observed to be peculiarly prone to obstructions in the lymphatic system, and where swellings or tumours actually occur without any ostensible cause for their appearance, the person is said to labour under genuine scrophula. Even when no tumours appear, such a structure of frame eminently modifies the symp-

toms of several diseases; particularly pulmonary consumption, lues venerea, dropsy and affections of the eyes, protracting their duration and endangering the event. Whether these effects be owing to a general debility of frame, the consequence of such a configuration, or to some specific virus in the system, has not been ascertained. It is probable, however, that both co-operate.

A first attack of Ophthalmia in a person of a scrophulous habit of body does not strike as differing materially from what is observed to occur in others where no such diathesis is present. Most commonly, however, the first stage of the inflammation in such a case terminates rapidly, while the second, or that wherein vascular debility exists, is of much longer duration. But after one smart attack, there ensues a decided disposition to ocular inflammation, which is induced by the slightest causes. Exposure of the face to a breeze of wind immediately produces a watering of the eyes, and objects appear as if seen through a mist. Reading with candle-light, intoxication from spirituous liquors, and irregularities in diet, are among the remote causes of most frequent application.

The eyes feel constantly heavy, and towards evening become stiff. Turgid vessels can be traced easily under the shining conjunctiva, and the eye-lids appear swollen and spongy. Indeed such a degree of local debility sometimes prevails, that the conjunctiva becomes suddenly suffused with blood, vulgarly called the blood-shot of the eye, without any accompanying pain; and this ecchymosis frequently disappears spontaneously. A glutinous matter is thrown out from the glandulæ meibomianæ, which, adhering to the tarsi, glues them together, particularly during the night-time, so as to render their separation in the morning painful and troublesome. But when, from the above or other causes, a more severe degree of inflammation has been induced, the eye-lids then become the chief seat of the disease. This must have been observed by every one, but the observation acquires additional force from the axiomic manner in which it is stated by the experienced Scarpa. He says a fact, which by its constancy merits the attention of every practitioner is, that every chronic Ophthalmia, whether arising from scrophula, small-pox, measles, herpetic eruptions, or lues venerea, has its seat always in the internal membrane of the eye-lids, and more particularly on their edges, and

among the glands of meibomius, rather than on the conjunctiva which covers the anterior portion of the globe of the eye; while, on the contrary, acute Ophthalmia, whatever may have been its cause, or the habit of body in which it occurs, uniformly prefers the conjunctiva on the globe of the eye *.

In such cases the eye-lids inflame and swell, a discharge constantly issues from the excretory vessels on their surfaces, which is extremely inconvenient, both from its quantity and acrimony, and which being constantly supplied, at last excoriates and ulcerates them. When ulceration once takes place, the disease becomes almost perpetual, and the whole eye appears to be one raw, red, spongy mass.——Although apparently involved, yet the conjunctiva resists for a long time, the violence of the inflammation, which is more immediately confined to the eye-lids; but the acrid nature of the discharge at last affects it too, and specs or films, especially in the case of children are formed on different parts of the cornea.——Indeed it is surprising that specs are not a more frequent consequence of this continued inflammation than they really are. I have

* Traité Pratique, &c. tom. i. p. 288.

observed them to occur more frequently among children where there existed an hereditary tendency to partial blindness from this cause, than as an effect of an Ophthalmia occurring in a person of a scrophulous habit of body. Frequently these specs are very sudden in their formation. Thus after a person has laboured under chronic scrophulous Ophthalmia for a long time, without experiencing any diminution of the faculty of sight, he shall be suddenly sensible of some interruption to his vision, and be surprised to discover a spec upon the cornea without any considerable degree of previous dimness of sight, or difficulty in the perception of objects.

Although the disease seems thus to be continual and progressive, it is nevertheless subject to a variety of remissions and exacerbations, seldom remaining two days together in the same state. The vessels during these changes assume every shade of colour from scarlet to purple, according to the stage and decree of inflammation affecting them. While the parts affected undergo these various changes, the patient is harrassed with a distressing headach and a corroding pain in the eye, a general irritability of the system prevails, which ren-

ders it easily affected by the slightest impressions.

When such affections of the eyes occur in children, or before the age of puberty, the change which the system undergoes at that remarkable period, frequently checks and sometimes removes them altogether. But if they continue beyond the acmè of growth, a weakness of sight and disposition to Ophthalmia remain during the rest of life.

Of the Venereal Ophthalmia.

Like scrophula, the syphilitic virus, when diffused through the system, frequently affects the eyes, and induces a particular species of Ophthalmia. This, more than any other variety of ocular inflammation, deserves the name of chronic, as it proceeds in a gradual and insensible manner to destroy the organs of vision.——In some instances, however, according to Mr Bell, the loss of vision is instantaneous, the patient being deprived of sight in the course of a minute or two, while the external appearance of the eye is but little affected; the pupil however remaining dilated even when exposed to the strongest light *.

* A Treatise on Gonorrhæa virulenta, and Lues Venerea, vol. ii. p. 139.

Though not much inflamed, the tunica conjunctiva always looks muddy and is of a brownish colour, and those small elevations which are an occasional consequence of acute inflammation are more numerous upon it in this variety of Ophthalmia, than in almost any other, and give it a characteristic fleshy appearance. They are produced probably by effusions of coagulable lymph between its folds.

The eye-lids too, inflame and ulcerate, but they are seldom affected in that severe manner which is observed to occur in the scrophulous Ophthalmia. As lues venerea however may occur in any constitution, it is not infrequently conjoined with scrophula, and the Ophthalmia which ensues in consequence of such a conjunction is in general more malignant than that which is the production of either singly. There is a symptom connected with this affection of the eye-lids taken notice of by Mr Bell which has seldom been observed; that the tears first form in drops near the internal angle of the eye, which produces a constant trickling over the cheeks. This appearance he remarks, is very apt to be mistaken for an incipient fistula lachrymalis; but it evidently arises from the puncta lachrymalia; being obstructed by

the viscid matter forming upon the cartilage of the eye-lids *.

In the venereal Ophthalmia, there is constantly present an irksome sense of itching, which is most troublesome towards evening, but both it and the pain remit in the morning; and this morning remission is considered by Plenck as a diagnostic mark of the presence of lues. In the more advanced stages, the hairs drop off from the cilia, the colour of the iris also changes, and the pupil acquires a ragged unequal appearance. The humours of the eye too, are not unfrequently affected, gradually losing their transparency, until they become perfectly opaque. The cornea thickens, acquires a turbid milky appearance, and becomes sometimes so prominent as to disfigure the eye, and effectually to destroy the faculty of vision.—These latter effects, however, are comparatively but of rare occurrence.

Besides that, in which Ophthalmia appears to be occasioned by the operation of a syphilitic virus diffused through the mass of blood, there is ano-

* Lib. cit. vol. ii. p. 142.

ther variety of it referable to the head of venereal, namely, that which appears to be the consequence of a suppressed gonorrhæa. Of all the varieties of the disease, this is by far the most malignant, and the most frequently fatal to vision. Fortunately its occurrence is but rare, when we reflect on the frequency of the malady from which it is supposed to derive its origin. I shall first state the phenomena connected with its appearance, and afterwards endeavour to ascertain how far its nature and causes have been explored.

The person is first seized with an acute burning pain in one or both eyes, which continues without intermission during the inflammatory stage of the disease; the tunica conjunctiva inflames, and becomes of a florid red colour, and very soon thereafter a copious discharge of a greenish puriform matter takes place. The eye-lids too, are particularly affected, and become soon so tumefied as to render it extremely difficult to examine the eye.—The patient is distressed with a violent headach, which, together with the pain in the ball of the eye, prevent the accession of sleep, and render him feverish and restless. The intolerance of light is so great, and the tumefaction of the eye-lids so

considerable, that before the third day of the disease, it is hardly possible to know exactly what has been going on. Upon separating the eye-lids, the whole conjunctiva appears a thick fleshy mass, as if it were composed of successive layers of blood vessels, and very often this excrescence is found to have encroached far upon the cornea, leaving it as it were sunk in the middle. At other times even a first view discovers the cornea to be opaque, and the aqueous humour turbid from the admixture of purulent like matter, forming the true hypopion. When this latter effect takes place, and it is to be regretted that its occurrence is but too frequent; the eye is destroyed. The tumefaction of the conjunctiva and eye-lids indeed gradually diminish, and the pain abates, but the faculty of vision is lost for ever. It is chiefly, if not solely in those instances, where this fungous excrescence is formed upon the sclerotic coat, indicating a more external affection, that sight is restored.

Upon a careful investigation it has been almost universally ascertained that the peculiar train of symptoms just enumerated when they occurred in an adult had been preceded by the sudden suppres-

sion of a gonorrhæa; although every gonorrhæa whose cessation is sudden, is not necessarily succeeded by such an Ophthalmia. In some instances, circumstances have occurred which might have operated as exciting causes, and which appear to have contributed to the suppression of the discharge by the urethra. Three cases which fell under the observation of Swediaur, and which terminated in the loss of sight, occurred in the winter season, when the weather was very cold, and one of them happened in the person of a young officer when on guard in a very cold night *.

The improper use of astringent or too highly stimulating injections, by suddenly checking or altogether suppressing the discharge, have tended to produce this affection. C. H. Erndtelius, as quoted by Trnka †, takes notice of this cause, and relates an elaborate case, which also terminated in the loss of sight. St Yves, Plenck, and Scarpa, who have had repeated opportunities of witnessing this virulent species of Ophthalmia, and who bear ample testimony to its fatality to vision,

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* Traité complet des Maladies Veneriennes, tom i. p. 158.

† Historia Ophthalmiæ, p. 62.

are silent with respect to the antecedent and concomitant circumstances. In the Annals of medicine for 1799, there is a case communicated by my friend Dr Robertson, and which is one of the very few on record which had a favourable termination. The gonorrhæa had in this case been mild, but the affection of the eye took place on the second day after its suppression; and the matter discharged, resembled exactly that which had issued from the urethra. I have seen three instances of this variety of Ophthalmia. In two the sight was lost, but in the other it was recovered. In neither could I trace the previous operation of any circumstances that could have been considered as an occasional cause, but I have little doubt, but that such exciting causes do occur, although they may escape observation.

From what I have observed in these cases, and from an examination of the statements of others, I think it will in general be found to hold, that it is chiefly during the first and inflammatory stage of gonorrhæa that its suppression is likely to produce this virulent Ophthalmia; and that after it has continued some time and the inflammation has abated considerably, even a sudden suppression of

the discharge at the urethra is not followed by any affection of the eye.

The most striking circumstances therefore in the history of this affection, and those which distinguish it from every other modification of Ophthalmia, are the violence of the inflammation, the uniform resemblance of the discharge at the eye, to that which had been suppressed at the urethra, and the rapidity with which vision is destroyed. Indeed, when once it begins, the disease runs its rapid course without apparently being affected by any application, and the loss or recovery of sight seems to depend entirely upon the comparative mildness or severity of the attack. A learned and a popular author gives a somewhat similar prognostic of this affection. When considering the varieties of Ophthalmia and their terminations, he says, "Venerea, præ cæteris, si a gonorrhæa virulenta imprudenter repressa ortum ducat, nisi protinus efficacissima curatio adhibeatur, rapidissimè increscit, oculique bulbum destruit et citissime obscæcat *."

* Burserius Institut. Med. Pract. vol. iii. p. 277.

Hence, however surprising such an occurrence may seem to be, and however difficult the explanation of it, I consider it, as an undeniable fact, that the sudden suppression of a gonorrhæa is sometimes followed by a malignant affection of the eyes, and that such suppression may in these cases be considered as the cause of that affection.

Mr Ware, in the last edition of his *Chirurgical Observations relative to the Eye*, when reviewing the opinion of St Yves, who is among the earliest writers on this subject, and who is favourable to the opinion, that the sudden suppression of a gonorrhæa produces Ophthalmia, has the following rather singular observation :—" This account is the more surprising, because such an effect (namely, that just mentioned) has never been observed by other writers on this subject, or any of the faculty with whom I am acquainted." P. 29.—Yet in the very next page he says, " Nevertheless it is a fact not to be contradicted, that such a complaint as St Yves describes, does sometimes accompany the gonorrhæa : but instead of commencing two days after the formation of the gonorrhæa, as is particularly stated by St Yves, I have more commonly observed it not to arise, till some time after

mercurials had been applied for the cure of the latter disorder." But St Yves is not so specific in his statement of the period of invasion as is here supposed. He merely states, that in most of the cases, the disease in the eyes appeared two days after the beginning of a gonorrhæa.—" *Dans la plupart*, cette maladie a paru deux jours après qu'un écoulement vénérien avoit commence *." But St Yves is not the only person who has taken notice of this coincidence; it has not only been observed, but has been minutely described by several eminent writers, whose works are supposed to be in the hands of every one; and the circumstance of it not appearing to them under the same forms in which it occurred to Mr Ware, can hardly be admitted as an argument for the non-existence of such a modification of Ophthalmia.

Mr Ware further supports his opinion by an analogical argument, to which I cannot assent.—" Nor," he observes, " is this purulent kind of Ophthalmia peculiar to those subjects in which a gonorrhæa has been previously contracted: for in many instances, the former has been found to take

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* Nouveau Traite des Maladies des Yeux, p. 141.

place, where the person affected by it has been entirely free from a venereal taint †." On the word *taint* there is a note in the following words:— "The Ophthalmia that deprived of their sight a considerable number of our brave soldiers in Egypt, during the campaign in 1801, and which is said to be endemic in that country, appears to have been of this nature." But although in the latter stages, and more aggravated forms of the Egyptian Ophthalmia, both the conjunctiva and the eyelids are deeply affected and discharge a puriform matter, yet in the great majority of cases, the two affections have no kind of similarity. In the Gonorrhæal Ophthalmia, strictly so called, the inflammation is always violent, and the matter discharged is from the commencement thick in its consistence, of a greenish colour exactly resembling the ichor of the urethra, and the disease terminates usually, in the course of a very few days in the loss of sight. The Egyptian Ophthalmia, again, although rapid in the progress of its symptoms, possesses the characteristic marks of the Common Ophthalmia. The conjunctiva is the chief seat of the disease; the discharge which in a great

† Chirurgical Observations, &c. page 31.

proportion of cases, comes on rather gradually, is for several days thin, and pale coloured, and the loss of sight is the effect only of a long continued disease.

It has been remarked by Swediaur, that the Gonorrhæal Ophthalmia has never been observed to occur in women. If the observation hold good, it may be regarded as a curious fact in the history of this singular affection. It is true, that women are much less exposed than men are to the influence of some of those occasional causes, which may contribute to the sudden suppression of the discharge at the urethra, particularly intense cold. Yet in that unhappy class of females among whom the primary disease most commonly appears, such concomitant circumstances cannot be of infrequent occurrence. Many of these miserable beings are constrained by necessity to pass whole nights exposed to every inclemency of the weather; and surely they are as often subjected to mismanagement in the treatment as the other sex. Perhaps the greater simplicity of structure in the organs concerned may dispose less to general irritation, and if the exemption be not a real anomaly, it is possible that modesty and ignorance, on the one hand, or thoughtless indiffer-

ence on the other, may tend to defer the use of injections, which might be hurtful from their acrimony or astringency, until the subsidence of the inflammatory stage, when it is probable, as far at least as the affection of the eyes is concerned, that they are less likely to be followed by pernicious effects.

Taking it therefore for granted, that the sudden suppression of a gonorrhæa sometimes produces a virulent Ophthalmia, it may be worth while to inquire upon what this coincidence more immediately depends, and how the eye, so remote from the seat of what has generally been considered as a local disease, becomes affected by it.

There are three different ways in which the eye has been supposed to be affected. *First*—By a direct application of the gonorrhæal matter to the eyes, by the fingers of the patient, or by carelessly bringing any substance into contact with them upon which some of this virus had been deposited. *Secondly*—By a translation of the virus from the urethra to the eye, usually denominated a *metastasis*. *Thirdly*—In consequence of a sympathy subsisting between the eye and the urethra.

The first mode of infection or that by a direct application of the gonorrhæal matter to the eyes, appears a very probable one, and if admitted, affords an easy and satisfactory explanation of the phenomena. Besides, virulent affections of the eyes have been ascertained to have been contracted in this manner; and considering the great sensibility of the eye, and the variety of modes in which the virus may be applied to it without the consciousness of the individual, it has been the opinion of several medical men, that this is the only mode of infection, however overlooked by the practitioner, or denied by the patient.

But there are qualifying circumstances connected with this view which invalidate the force of these observations. Thus, unless where there has been great mismanagement in the treatment, or gross neglect on the part of the patient himself, the Ophthalmia produced in this manner is neither so violent in its symptoms nor so destructive in its effects upon the eyes, as when it appears to succeed the spontaneous suppression of a gonorrhæa. This remark has been confirmed by Swediaur, and Scarpa expressly says " that the Gonorrhæal Ophthalmia by *inoculation* in cases where there

cannot be a doubt, but that the venereal virus was the immediate cause of the affection of the eyes, never threatens the destruction of the organ of sight, with so much impetuosity and rapidity, as when produced by what is called a gonorrhæal metastasis *."

But there is still a more remarkable difference between them. An Ophthalmia produced by a direct application of the virus to the eyes is not necessarily connected with a suppression of the discharge by the urethra, which runs its course without interruption; while this latter circumstance is so uniform an antecedent of the other, that it has been long considered as its immediate cause. Hence it appears, that it is not by a direct application of the gonorrhæal virus to the eye, that the variety of Ophthalmia so destructive to vision is commonly produced.

The second mode of communication, or by a metastasis from the urethra to the eye, has been long a favourite opinion with many, not only in Ophthalmia, but in other diseases. The idea seems

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* Traité Pratique, &c. tom. i. p. 278.

to have been received at first without much examination, and to have maintained its ground rather on account of the facility with which it explained several morbid phenomena, than owing to any intrinsic stability. Except through the medium of the sanguiferous or absorbent vessels, we are unacquainted with any channel through which any substance, however subtile, can be conveyed through the system; and a view of the mode in which the venereal virus is observed to be transferred in almost every instance from one part of the body to another, will enable us to judge how far either facts or analogy support this opinion.

The local affection for the most part makes its first appearance upon some part of the penis.—The lymphatics in its immediate neighbourhood swell and become painful, and their course can frequently be traced to the nearest cluster of inguinal glands. These also swell, suppurate, and often burst; and in a great proportion of cases, the disease stops here. But if the virus pass still farther into the system, it again takes the course of the lymphatics, which issuing from these inguinal glands under the name of vasa efferentia, pass through the iliac glands in the pelvis, and en-

tering the abdomen, communicate with the lumbar glands, and finally with many other similar vessels convey their contents to the receptaculum chyli, to be mixed with the mass of blood. It is true, that in some rare cases the system has been constitutionally affected without the appearance of any previous local affection; but this effect has in all these instances been slow and gradual, and an Ophthalmia, such as is alluded to here, has never been known to be the consequence of such an attack. Hence then as there is no direct intercourse by lymphatic vessels alone, between the urethra and the eye, the venereal virus in its supposed passage from the urethra to the eye, must necessarily pass through both absorbent and sanguiferous systems, and in our explanation of its progress, we are reduced to the supposition, that a matter of extreme virulence and activity, in opposition to its own laws, can pass suddenly through an extensive series of irritable glands without even exciting pain in them; and after having been diluted by an intimate commixture with the general mass of blood in the lungs should all at once, as if by an elective affinity, fall with concentrated energy upon the eyes, and give rise to a most violent inflammation. Such a supposition is surely highly improbable.

Mr Ware admits, that in the case of a hernia humoralis there may be a metastasis, on account of the vicinity of the organs concerned; but he objects to its taking place, in the instance of an Ophthalmia, on account of the distance between them *. But although it would even in the former case, be no easy matter to shew how the virus passes directly from the one to the other, yet if we admit at all, in any instance, a mysterious translation of morbific matter from one part to another, we are not warranted in limiting the range of its action.

But there is a still stronger analogy against this opinion. In no other instance do we observe secondary venereal symptoms to appear without a constitutional affection; and even admitting that our anatomical knowledge may be incompetent to trace every channel of communication in the system, yet still whenever venereal matter has been absorbed from a local sore and carried into the mass of blood, a perfect and constitutional affection has been the consequence.

That the system is not constitutionally affected, in consequence of an Ophthalmia from a suppressed gonorrhæa was observed by an early writer on

* Chirurgical Observations, &c. p. 30.

this subject, " Si morbus non intra breve tempus " levatur, omnes internæ oculi partes destruuntur, " *virusque plane perit* *." The same observation has been repeated by Bell and Scarpa, and will at once be deemed conclusive by all those who consider the matter of virulent gonorrhæa and lues venerea to be radically the same.

Hence I think we may conclude, that the opinion which considers this virulent species of Ophthalmia to be occasioned by a metastas, is isunsupported even by analogy, and much more improbable than that which refers it to a direct application of the virus.

The third opinion, or that which considers the gonorrhæal Ophthalmia to be produced in consequence of a sympathy subsisting between the eyes and the urethra, is strengthened by the insufficiency of the former two; but it has also some strong facts in its support.

Bichat, in his admirable treatise on the membranes, has classed and arranged them under cer-

* Joannes Librecht Schmveker—Leipsic Commentaries, vol. xxi. p. 477.

tain general heads, founded on their connection and similarity of structure and function. Thus the class of mucous membranes, which is the one concerned in this case, occupy the internal surfaces of the different cavities, which communicate with the skin. In one direction they enter by the mouth, nose, and anterior surface of the eyes, sinking deep into the different sinuses, covering the gums, and forming the tunica conjunctiva. Descending by the pharynx, they line the respiratory and digestive organs, and at the anus unite again with the skin. In another direction, they enter by the urethra and vagina, are reflected over the urinary bladder, and penetrate every secreting pore of the organs of generation. Although possessing a common structure, the intimate organization of the mucous membranes varies somewhat according to the situation and modified structure of the different organs which they defend. These differences this ingenious author has explored. They are a principal emunctory of the animal economy, and contribute by means of the fluid, which constantly lubricates their surfaces to remove any foreign matter that may accidentally come in contact with them *.

* Traité des Membranes passim.

From this continuous integrity throughout the extent of the mucous membranes, and from their similarity in structure and in function, we might infer an intimate consent or sympathy among the organs which they line; and naturally suppose that morbid affections of one part of this system might be communicated to another part; and from analogy we might infer that the one first affected would be relieved by the irritation being transferred to another. This alternation of action Bichat has himself established by several striking examples, and instances of this kind must have fallen under the observation of every one. I shall therefore limit the details to such only as seem more immediately to apply to the disease in question.

Ophthalmia and catarrh are frequently observed to be epidemic about the same time. They appear to have been connected in the instance of the Parisian Ophthalmia already mentioned. They seldom exist in the same individual at the same time, and if the one supervenes upon the other, it is generally in a sudden manner, and is always attended with a temporary suspension of the first affection.

Dysentery and Ophthalmia have been observed to alternate with, and mutually to relieve each other. Bruant, on whose accuracy we may rely, when detailing the history of dysentery, observes, that Ophthalmia always produced a marked relief when it supervened upon dysenteries of long standing: that the uneasy sensations in the eyes and the pains in the bowels mutually alternated with each other; but that the latter most commonly recurred after the cessation of the former, especially if attempts were not made to second these salutary movements *.

Mr John Hunter once met with a case, where the cutting of a tooth, produced all the symptoms of a gonorrhæa, and where this alternation of the pain and irritation were clearly ascertained to operate †.

Dr Swediaur says, that he has repeatedly seen the chronic inflammation of the eye-lids denominated Psorophthalmia relieved by the coming on of a gonorrhæa, when the usual remedies had fail-

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* Histoire Médicale de l'Armée d'Orient, seconde partie, p.p. 25, 26.

† Nat. Hist. of the Teeth, part ii. p. 126.

ed entirely; and he repeats a case recorded in Dr Lange's treatise on Ophthalmia, which is eminently illustrative of this connection. A butcher presented himself at the hospital of Buda, the capital of Hungary, to obtain advice respecting a violent inflammation of both eyes. Professor Plenck upon examining the patient discovered that this Ophthalmia proceeded from a recent gonorrhæa, which had been ill treated and suppressed, and proposed to inoculate the urethra to bring back the discharge. The patient understanding what was said, observed, that if that was all, he should soon find a remedy. He immediately went off, and eight days thereafter returned completely cured of the Ophthalmia, " demander conseil pour une gonorrhée qu'il avoit gagnée disoit il, de la même personne qui lui avoit donne l'autre *."

These instances sufficiently demonstrate the extensive influence of sympathy in organized bodies, and they tend to shew, that something besides mere nervous energy regulates its operations. Every part of the body being provided with nerves enjoys sensation in a greater or in a less degree.

* Traité Complet, &c. tom. i. p.p. 163, 164.

But the communication of sensation, or its transferrence in certain circumstances from one part to another at a considerable distance, has been indiscriminately referred to the same principle. It is therefore advancing a step farther in this investigation, to endeavour to ascertain upon what this particular selection depends; and the ingenious author of the doctrine has shewn that it is to be ascribed to similarity of structure and function in the organs concerned.

In those instances where catarrh and dysentery alternate with Ophthalmia, it is impossible for the patient himself to communicate any infectious matter from the seat of the primary disease; and the alternations of morbid action and comparative health are too frequent and sudden to admit the supposition of a morbific matter oscillating between them. The case of gonorrhæa and dentition alternating with each is equally inexplicable upon either of these suppositions. In the case related by Dr Lange, the doubt was entirely removed, and the patient himself, by the most decisive experiment, demonstrated that gonorrhæa and ophthalmia alternate with each other without any communication by means of virus between the organs concerned,

either by the fingers of the patient or by a metastasis.

The state of the opinion, therefore, at present seems to be explicitly this: that the direct application of the gonorrhæal virus to the eye produces an Ophthalmia, differing however in its symptoms and effects from that which appears to be the consequence of a sudden suppression of the discharge at the urethra; and that therefore such application of the virus is not the constant cause of such an affection of the eyes: That it is extremely improbable that it should be produced by a metastasis or translation of matter from the urethra to the eye, as the admission of such a supposition is a direct contradiction to the laws which are known to regulate the transference of venereal matter from one part to another of the body: That in consequence of an intimate connection subsisting between the urethra and the eye, from the continuity of the mucous membrane that lines both, and from its structure and function being the same in each, there exists a sympathy between these organs, rendering the one susceptible of the affection of the other: That upon this sympathy depends, in many instances, the sudden translation of morbid action

or disease from one part to another, and that among others of a similar kind, to its agency may be ascribed the appearance of Ophthalmia, in consequence of a suppressed gonorrhæa.

SECTION III.

CONSEQUENCES OF OPHTHALMIA.

The terminations of Ophthalmia have been mentioned already in a general manner; but to complete the history of that disease, it appears necessary to state separately, a few of those morbid affections which appear on many occasions to follow as its immediate consequences. Perhaps there is no derangement to which any part of the eye is subjected, which may not on some occasions have been produced by inflammation, and in this comprehensive view of the subject, such changes might be included among the sequelæ of Ophthalmia. But it is not my intention to be so minute, and I propose to limit my details to such changes only, as have a close and natural alliance to the principal disease.

Encanthis.

Plenck defines this appearance," excrescentia vel " intumescentia caruncule lachrymalis *." He takes notice of three species of it—the mild—the malignant—and the inflammatory. They may be considered however, rather as different stages of the same affection, at least the inflammatory always precedes the malignant; the mild often remains long inactive.

Encanthis is a consequence for the most part of symptomatic Ophthalmia, and of that species which appears to be induced by Scrophula. It is at first, as Plenck describes it, a soft indolent excrescence of a reddish colour, not unlike a small mulberry, arising from the caruncula lachrymalis. Scarpa entertains similar notions of its nature and origin. At the commencement of its formation, the patient complains of an unusual sense of fulness at the internal angle of the eye, and soon after there appears an enlargement of the caruncula lachrymalis and thickening of the semilunar membrane. It creates but little pain but impeding the regular

* Doctrina de Morbis oculorum, p. 67.

flow of the tears into the nose, it is very troublesome by keeping up a constant watering on the cheek. Increasing in size, it prevents the free motion of the eye-lids, which are always more or less inflamed in its neighbourhood. If examined with the fingers, it feels unequal or granular, and appears to be loosely attached by a broad connection to the subjacent parts.

It seldom subsides altogether, but generally after some fresh exposure to irritation, inflames, enlarges, and becomes painful. Its attachments also increase, involving the caruncula lachrymalis, and encroaching sometimes upon the cornea. Both eye-lids become inflamed, and are prevented by the size of the tumour from being closed. The under-lid is not infrequently pushed outwards, forming the ectropium. Headach comes on, and the pain which is of a pungent, lancinating kind, shoots up towards the temples. On some occasions this excrescence is reduced even after all this to its former state of comparative indolence; but more commonly after it has passed through the inflammatory stage, it assumes a cancerous appearance, when its removal is more difficult.

Pterygium.

Plenck considers this membranous production as a prolongation or expansion of the fibres or vessels of the caruncula lachrymalis, or semilunar membrane, and enumerates three species of it *. His idea of its origin appears to be incorrect, as it by no means arises uniformly from the internal canthus of the eye, where the caruncula lachrymalis is situated, but both from the outer angle, and occasionally also from the central parts of the eye. Scarpa's view is more rational, and more consonant to the phenomena. He considers it a natural expansion, or rather separation of the thin external lamina of the conjunctiva, changed into a pulpy and varicose membrane, in consequence of violent and long continued inflammation.

The pterygium, or pterygion, succeeds either to a long and obstinate Ophthalmia, or to a very severe and short attack. It seldom attends the ordinary forms of the disease. Hence it succeeds to those chronic species of the disease which are pro-

* Doctrina de Morbis oculorum, p. 96.

duced by a scrophulous taint in the system; or to the more violent degrees of acute Ophthalmia, particularly to that variety denominated Egyptian, of which it is a frequent consequence.

It is always of a triangular shape, having the apex turned towards the cornea, and this uniformity of figure demonstrates, in some measure, its formation and nature. The external lamina that covers the conjunctiva and cornea is thin and delicate, and its attachment is close and intimate with the cornea, as it approaches the latter. Hence, whether the separation from the subjacent laminæ be owing to enlargement of the vessels, or to effusion, or to both, the effect will be most conspicuous where there is the least resistance opposed.—The separation commences, therefore, at the body of the eye, and proceeds towards the cornea; and meeting with opposition as it advances towards the centre, it naturally extends itself in a lateral direction. Thus the base of the triangle is on the white of the eye, and its apex towards the cornea. When it encroaches upon the cornea, it impedes vision, and however loose its attachment, seldom admits of complete removal, until every tendency to inflammation has subsided.

Ulceration of the Cornea.

Supuration and ulceration occur sometimes on the external surface of the ball of the eye, as well as on other parts of the body, as a consequence of previous inflammation, although secreting surfaces are less frequently subjected than others to this morbid change. The spot where the suppurative process is going on, becomes evidently prominent, of a brownish colour, and is attended with exquisite pain. Yet, when perfectly matured, this tumour in many instances remains inactive, and manifests no disposition to burst. Nor is the matter which happens to be discharged genuine pus, but an ichorous serosity which excoriates the parts over which it flows, and the ulcer often degenerates into a very obstinate sore, which the action of the tears and the light appear to support. And when these ulcers do heal, there usually ensues a depression or cicatrix, which impedes vision.

Although such is the general course of things when an ulcer occurs on the cornea, yet I have frequently seen a more speedy cure, and more favourable termination when a child happened to be

the patient. There is, in early life, a powerful disposition to reproduction, and every function is then performed with facility and vigour.

The ulcer which I have now described occurring as a consequence of ordinary Ophthalmia, seldom penetrates the cornea, so as to permit the escape of any of the parts contained within the ball of the eye, but such an effect is not an infrequent consequence of the Egyptian Ophthalmia; and Mr Larrey mentions this as a frequent occurrence in Egypt. He observes, that the opening in the cornea formed by the ulceration, is always round, and nearly of the same size in all cases; that on some occasions the whole internal parts protrude disfiguring the pupil altogether, and forming Staphyloma, which however gradually diminishing in size, returns back into the chambers of the eye; sometimes a small portion of the protruded parts, generally the iris remains without, and acquires a pulpy texture and cancerous appearance *.

Opacity of the Cornea.

An Opacity of a part or of the whole cornea, is a frequent consequence of Ophthalmia, but it

* Relation Historique et Chirurgicale, p.p. 20, 21.

varies considerably in its nature and susceptibility of removal, according to the degree of inflammation that had preceded its occurrence.

The cornea sometimes, and in particular cases assumes a milky appearance, and the individual is subjected to temporary blindness, without much preceding inflammation, and often where little more had operated than merely a determination to the head. I had frequently observed this milky appearance of the cornea, and had been surprised at the rapidity with which it came on, and with which it disappeared; but I had no accurate conception of the mode in which these changes were effected, until my friend, Dr Barclay, by stating to me the following curious observation, enabled me in some measure to explain it. Trying to fill the vessels of the cornea from one of the veins lying on the outside of the sclerotic, he injected mercury, and instantly saw the cornea become opaque and of a milky colour. The appearance led him to suppose that he had succeeded; but the eye-ball was heavier, and both the sclerotic and the cornea very tense. On pressing the eye, some of the mercury returned by the vein, a considerable degree of the tension was removed, the cornea reco-

vered part of its transparency, and he saw a number of mercurial globules lying in the angle between it and the iris. These globules, when the eye was shaken horizontally from right to left, did not cross towards the pupil, but run round in the angle in which he had observed them, shewing that the iris must have been convex towards the cornea at that time. To account for the return of transparency in the cornea, he supposed that the pressure and elasticity of the vessels had driven back the mercury, and satisfied with this view, he resolved to inject another eye, and preserve it afterwards in spirits. In removing the muscles from this other eye, he held it in his left hand, and accidentally pressing it, to keep it steady, to his great surprise he saw the same appearance which he had supposed to have been produced by the mercury. Instead therefore of injecting this eye with mercury, he injected it with water, and saw the cornea rendered as opaque and milky in its colour as it had been by his finer injection—The conclusion was obvious; that the opacity arose from tension, and the tension in two of the cases from a more than usual quantity of fluids *.

* The Doctor further informed me, that he had soon after an opportunity of verifying his opinion in the case of a

Hence the increase even of a drop or two in the quantity of the aqueous humour, by distending the cornea, will render it perfectly opaque, and this opacity continues as long as this superabundance of fluid is present. It is attended with headach, and a sense of weight and fulness, and may be distinguished from the deeper affections of the cornea by its milky appearance, the comparative suddenness of its formation, and by the opacity being rather more considerable when the head hangs downwards, than when examined in the horizontal posture. Mr Ware's eighth case of Ophthalmia appears to have been of this kind. A lady about 50 years of age was affected with dimness in the sight of her eyes. The external marks of inflammation were slight, but the patient laboured under cough, and was subject to frequent attacks of inflammation in her lungs. These circumstan-

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dog, who became suddenly blind in the course of a night, but that the blindness was removed, by bleeding and purging, in the space of two days.

There is another fact connected with this subject, which I derived from the same source, that it is not uncommon in horses to become blind after they are sent to grass (probably from the dependent position of the head), but they recover their sight again in a short time, assisted perhaps by the purgative nature of their new food.

ces led Mr Ware to think that the dimness complained of might be occasioned by an inflammatory diathesis in her system. With this view he prescribed leeches and evacuant remedies, and the dimness was speedily removed *. Of this kind of dimness appears to be those sudden and temporary species of opacity which sometimes succeed to the improper or long continued use of mecurial medicines, to suppression of the menses, and where there occurs a sudden determination to the head.

The observation that the cornea may become opaque, from an increase in the quantity of the aqueous humour distending it, is of considerable importance. It leads to a new view of the subject, and indicates a plan of cure, both effectual and different from what has been usually adopted in similar cases.

When opacity of the cornea succeeds to a chronic Ophthalmia, is slow in its progress, is connected with a varicose state of the veins, rather impedes, than obstructs vision, and gives the cornea a dull turbid appearance, without any apparent eleva-

* Chirurgical Observations, &c. p. 162.

tion it receives the name of *Nebula*. This too is rather a favourable variety of opacity. It appears to be occasioned by a gradual enlargement in the diameters of the veins which ramify upon the conjunctiva, followed by a dilatation of the minute veins which creep upon the external surface of the cornea; and which, being at last ruptured from over distention, or the vis a tergo, effuse a whitish matter, which insinuating itself between the thin external fold of the conjunctiva, which covers the cornea and the subjacent lamina, forms those spots and muddy appearances, which constitute the affection in question. It is no doubt possible that the smaller arteries may effuse part of their contents, and contribute to the formation of the nebula; but the following observation from Scarpa seems to prove, that, in instances of this kind, the veins are the vessels principally concerned. This acute observer injected the arteries and veins of the head of a person who had died of pulmonary inflammation, but who had laboured long under chronic varicose Ophthalmia with a nebula on the cornea. He found that the wax which filled the veins of the conjunctiva, had not only found a free passage into the external cluster of the same veins, but also into the minute venous ramifications of the same

cluster, where they creep upon the surface of the cornea, at the very spot where the nebula existed, while at every other part of the circumference of the cornea, the wax had been arrested in its passage, owing to the intimate and close connection between the cornea and sclerotic. In reflecting on this appearance he says, " It is truely wonderful to examine this eye with a magnifying glass. It is easy to perceive the delicate net-work formed by the small and numerous veins at the point of union between the cornea and sclerotic. They anastomose among themselves in a thousand ways around this circle, in such a manner that not one passes the boundary prescribed by the close adhesion of the delicate lamina of the conjunctiva where it advances beyond the cornea to cover it externally *."

When opacity of the cornea is a consequence of a severe attack of active inflammation, it appears to depend on an effusion of lymph from the minute arteries which penetrate the cornea, and, like every other effect of increased vascular action, it is often accompanied with a destruction of the tex-

* Traité Pratique, &c. tom. i. p. 305.

ture of that delicate substance. This modification of opacity has been denominated *Albugo*. It is a more permanent affection than the nebula and of more doubtful removal. The worst kind of *Albugo*, especially if it has been attended with a cicatrix on the cornea, has received the name of *Leucoma*. There appears however, in reality to be no necessity for these distinctions.

Besides being the sudden effect of a violent attack of Ophthalmia, Albugo is sometimes occasioned by a local increase in the action of the vessels seated deep in the substance of the conjunctiva and sclerotic, after the more external marks of inflammation had subsided. I have met with this repeatedly. Mr Ware's 14th case of Ophthalmia, entitled, " Opacity of the Cornea of both Eyes with a very slight Degree of Ophthalmia, consequent on a Typhus Fever, and cured by an operation," is an instance of this kind. The patient was a young lady of fifteen years of age, affected successively with dimness of sight in both eyes; and was cured by destroying the vessels leading to the cornea, and thus cutting off, radically, the source of effusion. The *Albugo*, or *Leucoma*, seems to differ from the *Nebula*, in being the production of active or arterial inflamma-

tion; and in being of more permanent existence.

Hypopion.

When Ophthalmia has been severe and of long continuance, and when the more internal parts of the eye have been chiefly affected, a species of suppuration takes place, and the aqueous humour becomes mixed with a whitish opaque matter, rendering the whole eye muddy, and destroying vision. This constitutes what has been denominated *hypopion.* It may be apprehended, when the inflammation passes the ordinary period of decline, seems to be but little affected by the use of remedies, and when the patient complains of a pungent and burning pain in the ball of the eye. Hypopion is not an infrequent termination of the purulent eyes of new-born children, is a very common one of Gonorrhæal Ophthalmia, and occasionally also of that variety denominated Egyptian Ophthalmia.

It has been a subject of dispute, whether there be any real production of pus in this case. Scarpa considers the matter so produced to be an exudation of coagulable lymph from the internal surface of

the choroid coat and uvea, when in a state of inflammation *. Others, again, have supposed, that there was a real destruction of parts, as takes place in suppuration in other parts of the body. It is somewhat difficult to ascertain, with precision, the actual state of the parts concerned. Few individuals die in consequence of ocular inflammation singly, however violent it may have been, so that opportunities but seldom, if ever, occur of examining a hypopion in a recent state; and when it has lasted for several years, changes have taken place which give results of a very opposite kind. It is true that membranous secreting surfaces, such as the eye, the nose, and the urethra, are much less disposed to ulceration than parts not provided with such an apparatus. But although this occurrence be therefore comparatively rare in these organs, there can be little doubt of it happening occasionally at least. The nose is frequently ulcerated from a venereal taint in the system, and the urethra is reduced to the same state from local acrimony, and from both a matter is discharged resembling pus. Hence therefore it appears that both causes may operate: that when the termi-

* Traité Pratique, &c. tom. ii. p. 3.

nation has been favourable, and vision has been restored, it may be presumed that effusion only had existed; but that when the turbidity has continued permanent, and sight been irrecoverably lost, that both suppuration and ulceration had been present, and that the organization of the more delicate parts had been destroyed by their joint operation.

Staphyloma

Consists in a thickening and projecting of the cornea, sometimes beyond the eye-lids, accompanied with inequality of surface, loss of transparency, and destruction of sight. It is seldom a consequence of the common Ophthalmia, but most commonly succeeds to that variety of the disease, which seems peculiar to new born children, to the Gonorrhæal, and Egyptian Ophthalmia, when the inflammation runs very high and is attended with a copious discharge of puriform matter.

Richter first controverted the general idea, that the Staphyloma was hollow and soft, and the cornea thin, and shewed that it was compact, solid and thick; and this he conceived to be the case

in every instance. Scarpa considers the idea of Richter correct only as applied to recent cases; but asserts, that after a long continuance of the affection, the cornea undergoes changes which, instead of augmenting its thickness, appear to diminish it *.

In infancy and child-hood every part of the body, and the eye among the rest is of a loose texture, and more susceptible of extension than in more advanced life. Hence, when the eye becomes affected with the violent puriform Ophthalmia, effusion speedily takes place from the vessels on the external surface of the conjunctiva, and from those also within the cavity of the eye. The former finds a ready outlet over the cheeks, but the latter must accumulate in the place where it is effused. The cornea is the least dense portion of this spherical cavity, and it most readily yields, and by yielding, assumes a conical form. If the dilatation continue until the inflammation subsides, the form is permanent; —and the cellular substance of the cornea becoming condensed, and the thinner parts of the effused fluid being absorbed, the genuine Staphy-

* Traité Pratique, &c. tom. ii. p. 182.

loma is produced. But if the distending cause continue until rupture ensues, the matter is discharged at this opening. But when this is the case, other parts, especially the iris, portrude at the opening, and this appearance constitutes another variety of Staphyloma. It is evident that this latter variety may be induced at any time, by a wound in the cornea.——Matters remain a considerable time in this state, but as life advances the disposition of parts to growth or augmentation in volume ceases, and absorption ensues, and the cornea becomes thinner. This explains the observation of the sagacious Scarpa, that he never saw a case of Staphyloma involving the whole of the cornea, which had not commenced in early life; and that the thickness and density of the cornea were in these cases inversely as the age of the person. In some rare instances the cornea projects greatly beyond its natural line, and acquires the conical shape without in any degree losing its transparency.——In these cases, however, this change of form is not preceded by inflammation. I once saw an instance of this kind in the Royal Infirmary of Edinburgh.

CHAPTER II.

OF THE CAUSES OF OPHTHALMIA.

A FEW of the causes of Ophthalmia have been already stated at considerable length in the Inquiry, and in the preceding chapter. These, I shall mention in this place, merely to preserve the unity of the whole; but the others demand a more minute investigation. They are extremely multifarious and diversified; but in enumerating them, it is not easy to fix upon a plan of arrangement that shall more clearly than another display their relative importance. Many are common to this affection with other diseases, and but a few can be considered as peculiar to Ophthalmia. Perhaps, therefore, as natural a division as any may be into causes which are external to the body, and such as originate within the system itself. In conformity with this view, I shall begin the consideration of the first class.

SECTION I.

CAUSES OF OPHTHALMIA, WHICH ARE EXTERNAL TO THE BODY.

Heat and Light.—A certain degree of these powers is indispensably necessary for the healthy exercise of the organs of vision; and it can be their excess only that is hurtful. Yet, operating by themselves through the medium of the solar rays it is difficult to say when this excess actually exists. The inhabitants of hot climates, all other things being alike, do not appear to suffer more from affections of the eyes than those living in more temperate regions. In the former, however, the arrangements for the periods of labour and rest, are so conformable to the nature of the climate, that they seldom suffer from any single effect of it.—But, in conjunction with other circumstances, in themselves trivial, both light and heat become highly hurtful to sight. Thus, in the different towns upon the coast of Barbary, subject to the Emperor of Morocco, where it is the practice to white-wash the walls of the houses externally, the reflection from their surfaces is so dazzling and

stimulating to the eyes as greatly to weaken them, and often to induce high degrees of inflammation. Even strangers, who can dispense with the use of the turban, suffer greatly from this cause; while, on the opposite and contiguous shores of Spain, where no such custom prevails, the inhabitants are remarkable for the healthy appearance, and even penetrating brilliancy of their eyes.

Any sudden exposure of the eyes to great degrees of heat or light is very hurtful to vision. Thus the glare from lustres in a highly-illuminated hall, or the pungent heat of a glass-house furnace, have been known to induce a considerable degree of inflammation even in a short space of time, and the sudden blaze of an electric discharge has destroyed sight in an instant.

The kind of light too, to which the eyes have been exposed, has a considerable effect in exciting inflammation in them. Thus, much reading or writing with candle or fire light, is much hurtful to sight, than the same exertion under the steady light of the day. In the former, there is an unsteady glimmer, and constant undulation of the air, which distracts the eyes, and requires a

greater exertion to fix them on the page. Young people are often extremely thoughtless in this respect, and if engaged with an interesting performance, are very little solicitous about the kind or degree of light which they happen at the time to possess. They frequently sit before a fire drooping the head, until headach and a sense of general uneasiness oblige them to disist, but again return to the charge when these uneasy sensations have subsided. In this way I have seen the foundation laid for obstinate and long continued affections of the eyes; and Trnka quotes the case of a young man so given to reading with candle-light, that he brought on a violent inflammation of his eyes, which resisted every remedy, and at last terminated his life *.

But however favourable the kind or degree of light, it is injurious to sight to persist long without intermission in any exertion where the eyes are principally concerned; and whenever they feel fatigued and stiff, begin to water, and spots appear to wave before them it is full time to leave off. They are soon recruited by a short repose, or even by the change of objects.

* Historia Ophthalmiæ, p. 24.

Cold and Moisture.—It is the extremes of these, or rather their sudden alternations with heat or light, that chiefly give rise to inflammatory affections of the eyes. In Lapland, as much may be ascribed to the constant reflexion from the snow as to the real cold, in producing that weakness of sight to which its miserable inhabitants are subject, and Byron, in the interesting narrative of his shipwreck upon the coast of Patagonia, where the climate is cold and damp, and where the inhabitants earn their scanty and precarious subsistance chiefly by diving, and remaining several hours together in the water, he does not state inflammation of the eyes to be a consequence of this practice. *Alma natura prolem nunquam deseruit.* Upon the preservation of the organs of vision depends the prolongation of existence, and they early accommodate themselves to the rude shocks to which they are daily exposed.

Inflammations of the eyes are much more common in this climate during the winter time, than in any other season of the year. They most frequently come on, when to a comparatively mild state of the atmosphere there succeeds an easterly wind with cold damp weather. Mr Reilly sur-

geon of his Majesty's ship Saturn, relates an instance of this kind. When off Brest, on the month of October 1797, when the weather was damp, and the wind from the east, Ophthalmia broke out among the crew, three hundred of whom were attacked by it, and he remarks that the sick list varied with the weather *.

Soldiers on duty, on advanced posts, in high latitudes, alternately exposed to the bright light and heat of the day, and to the cold and dews of the night, are often seized the very next day with Ophthalmia. The explanation of this is obvious and familiar.

Deranged States of the Atmosphere.——To this cause may be ascribed Epidemic Ophthalmia. We are indeed unacquainted with the nature of those changes in the atmosphere upon which the production of disease depends. But the universality of the attack at particular periods leads to the belief of the agency of this cause.——The Parisian Ophthalmia in its origin, at least, is an instance of this kind, and inflammatory affections of the eyes

* Trotter's Medicina Nautica.

have appeared epidemic in every age, and been described as such by a multitude of authors.

Contagion.—The influence of contagion, as a cause of Ophthalmia, has already been discussed in the Inquiry.

Winds and Dust.—The hot and desolating winds of the Asiatic desarts have been already mentioned in Part IV. of the Inquiry. In European countries, winds operate in the production of Ophthalmia, by their force, and by the cold which they bring along with them, particularly in the winter season, and in certain situations, by their raising particles of dust into the atmosphere, and when passing over sandy and calcareous soils, their operation in this way is often very considerable. Sand is very penetrating, and never fails, from the angular form of its particles, to excite irritation when introduced between the eye-lids. But as silicious earth is comparatively insoluble in the animal fluids, it admits of easy removal. Calcareous earth or lime is more readily diffused over the surface of the eye, and besides, possesses a corrosive quality with respect to animal bodies, which depends no doubt upon its greater solubility and its avidity for mois-

ture. Obstinate and dangerous affections of the eyes have been occasioned by particles of lime insinuating themselves between the eye-lids. Whenever, therefore, there is reason to suspect that the eyes have been exposed to any of these or similar sources of injury, even although no pain may at first have been induced, the person should bathe them in luke-warm water, by plunging the eyes open into an eye-cup, so that the water may have free access to every part; and if this shall be deemed insufficient to dislodge the offending cause, its operation may be rendered more effectual by the aid of a syringe.

Foreign Bodies entangled in the Eyes.—Besides particles of dust which are raised by the winds, and which operate generally, there are an endless variety of bodies which accident may introduce into the eyes; and indeed when we reflect on the peculiar delicacy of structure of this organ, and its constant exposure to external injuries, one cannot help being surprised that it does not suffer more frequently from causes of this kind.

Blacksmiths, and those employed in manufacturing metals are continually exposed to sources of

external injury.—Bits of the metal are sometimes driven off from the anvil or the wheel with great violence, and striking against the eye often imbed themselves in the sclerotic and cornea, when their removal is attended with very considerable difficulty. Manufacturers in glass are exposed in a similar manner, and Ophthalmia induced by such a cause is very obstinate and dangerous, from the difficulty of dislodging the bit of glass entirely. Masons too, suffer much from accidents of a similar nature, and the greater number of that class of men in Egypt, are either blind, or labour under disorders of the eyes. This effect is perhaps to be ascribed more to the action of the lime, than to the projection of bits of stone from the chisel.

Insects too, not infrequently, insinuate themselves between the eye-lids, and often produce a sudden and considerable degree of pain and inflammation. This effect appears to arise not only from their size and shape, but from an acrimonious matter which is discharged from their bodies—I once met with a case of Ophthalmia in a boy of three years of age, which appeared to be caused by the presence of minute animalcula, nestling on the in-

ternal borders of the tarsi. They excited a constant itching, and their destruction was not effected without some trouble. Small bits of coal are frequently driven off with great violence from the fire, especially in the winter time, when the coal is saturated with water, and which fly off in different directions. The eyes frequently suffer from this cause, which has a twofold operation; the forcible impression which the bit of coal itself makes, and the burning heat which it communicates.—In short, we may refer to this general head, every substance capable, either by mechanical pressure or chemical acrimony, of exciting the vessels of the eye into undue action.

Acrid Fumes and Vapours.—Under this head may be comprehended the smoke of tobacco, of burning wood, pit-coal, and every acrid elastic fluid. They act chemically from the minute division of their particles, and cannot be excluded but by removing altogether from the sphere of their influence.

External violence.—This comprehends blows, wounds, and punctures—A slight blow is often followed by an immediate inflammation of the eye. But if it be a severe one, it produces a contusion

over the eye and parts adjacent. From the force of the impression, sight appears to be destroyed at once, and the eye exhibits a disordered and muddy appearance. In some cases, this derangement is permanent, and the faculty of vision is irrecoverably lost; and in others, it is entirely and spontaneously restored.

My friend, Mr Law, senior surgeon to the Royal Infirmary of this place, mentioned to me lately a very singular effect from a blow. The patient presented himself at the hospital the day after he had received it. There was a considerable tumefaction, and a very general ecchymosis both on the eye-lids and on the tunica conjunctiva; and on the upper part of the sclerotic, about a line or two from the cornea, appeared a slight projection apparently vesicular. With the view of removing a cause of irritation, it was punctured with a lancet, and immediately a body started out, which was evidently the lens. The pain and external ecchymosis continued for several days, during which time leeches and other means for obviating inflammation were employed. The pupil remained very much dilated, and the parts behind it exhibited a fiery red colour, which Mr Law ascribed to a universal extravasation of blood. Vision was permanently lost.

Blows are a frequent cause of obstinate and permanent derangement of the parts more immediately subservient to vision, in this country, where the disgraceful practice of pugilism is held in such general estimation.

Wounds or punctures, especially the latter, are always attended with exquisite pain, and however, slight to appearance, never fail to induce a high degree of inflammation. An extensive wound, by dividing some of the finer parts of this delicate organ, may for ever destroy its functions, or it may form an opening through which others may be protruded. Such occurrences are by no means infrequent, and many cases of this kind are already on record. Yet, in contemplating their progress, it is truly wonderful to observe the disposition in the system to obviate the effects of circumstances which tend to derange its organs. Thus, as Mr Ware remarks, although the pupil be drawn from the centre to the outer margin of the iris, and its shape changed from a circular to an irregular form, it nevertheless often preserves its power of contracting and dilating, and the faculty of vision continues unimpaired. Mr Benjamin Bell, in his Observations on Cataract, relates a curious instance of this

kind, which, while it records an interesting fact, displays his candour in a very striking manner. Having performed the operation, he observes—"The eyes were both apparently sound in other respects: In one, the whole of the vitreous humour was forced out along with the cataract, and the eye sunk entirely to the bottom of the orbit; in the other, the operation was performed with much accuracy; the cataract was extracted, and none of the vitreous humour escaped. In the course of three or four weeks, however, from the operation, both eyes were of the same bulk; their appearance was perfectly similar, and the patient discovered objects equally well with each of them *.

M. Larrey met with a similar occurrence:—A light-horse man of the Consular Guard received in single combat a wound by a sabre, which perforated the right eye, producing a transverse wound of the cornea, of some lines in diameter, with the loss of a small portion of that membrane itself.—The wound, according to the report of the soldier, was followed by the evacuation of a thick, limpid liquor, the sinking of the eye, and the total loss

* A System of Surgery, vol. iv. p.p. 237, 238.

of sight. The man despaired of ever recovering the use of his eye; but, to his great surprise, the globe acquired its wonted rotundity and natural size, in such a manner that no doubt could be entertained that the vitreous humour, of which a certain quantity had escaped from the eye of this person, had been regenerated †.

The Acrid matter discharged from ulcers, &c.— By this I mean the casual application of morbific matter of any kind to the eye. Thus, I have known a severe Ophthalmia to be produced in a child from bringing into contact with the eyes the matter adhering to the dressings of a foul ulcer; and Mr Ware has lately mentioned a remarkable instance of this kind. "Two female children (he observes), the eldest only five years of age, were attacked with a purulent coloured discharge from the vagina, without any previous indisposition, or any probable cause that could be assigned for it. The surgeon who usually attended the family recommended a vitriolic lotion to be injected, which in a short time removed the disorder. The operation of injecting the lotion was performed by the

† Relation Historique et Chirurgicale, &c. p. 39.

mother of the children; and about a week after it had been used, the mother, who as well as the father, were perfectly free from any complaint similar to this of their children, was attacked with an inflammation of the right eye, the conjunctiva of which swelled very rapidly; and it was soon accompanied with a profuse purulent discharge;—evacuations of various kinds had been employed but without abating the disorder, and at the time I saw her the cornea was on the point of bursting, which happened that very day, totally destroying the eye as an organ of vision. Happily the other eye was not affected in a similar manner *".

It is curious to observe how often children are affected with disorders in the genital organs. I was once obliged to perform the operation for paraphymosis on a boy of seven years of age, attended with a virulent discharge from the urethra. The child could give no account whatever of the origin of his disease, but it was conjectured that he had slept in a bed which had been previously occupied by a person labouring under gonorrhæa.

* Chirurgical Observations, &c. p. 33.

Intemperance in the use of intoxicating liquors.—The baneful effects of frequent excess in spirituous liquors are not confined to the eyes alone, they manifest themselves too legibly on other parts of the body, and on the mind itself. Hepatitis, and the various forms of dropsy, sooner or latter assail the votary of Bacchus, and stupor, imbecility and even fatuity accompany him through life, if a rapid fever, the consequence of some debauch, does not anticipate their arrival by terminating his miserable existence.

The high degree of excitement produced by the almost constant action of a powerful and penetrating stimulus cannot fail to wear out in a rapid manner the irritability of the system; and parts possessing great sensibility, and which are besides hourly exposed to other stimuli, such as the eyes, suffer sooner and become among the first to exhibit marks of perpetual disease. A first excess of this kind often produces a genuine Ophthalmia, characterized by all the symptoms of active inflammation, which by care and the use of proper remedies is removed.—A repetition of the excess however, following fast upon the former more easily produces the effect, but its removal is more diffi-

cult, and every succeeding indulgence tending to maintain it, the eyes at last, assume a fiery redness, appear dim and cloudy, water, and feel constantly stiff and uneasy.

This cause operates, although more indirectly, even in the case of infants. Thus intemperance in the nurse is a frequent cause of disease in the infant. I have known obstinate inflammatory affections of the eyes in children traced to frequent ebriety in the nurse, and removed soon after weaning, or by changing the nurse.

SECTION II.

CAUSES OF OPTHALMIA, WHICH HAVE THEIR ORIGIN IN THE SYSTEM ITSELF.

Disordered States of the Stomach and Bowels.—Ophthalmia is observed sometimes to depend upon, or to be connected with certain disordered states of the primæ viæ. Plenck takes notice of this coincidence, and denominates the Ophthalmia which ensues, *Consensualis*. He considers it as arising from

impurities collected in the stomach and bowels, and as occurring frequently among children.—Bruant says, that the affection of the alimentary canal may be sufficiently well ascertained when the patient complains of a variable headach, has considerable thirst, and when there appears a tinge of yellow upon the inflamed conjunctiva *. These symptoms will in most instances determine the seat of the cause of the disease, but it sometimes happens that the eyes are affected without any sensible derangement of either the stomach or bowels.—There are however two symptoms which are rarely absent when this connection actually exists, and which I should therefore consider as more characteristic, namely, a burning pain confined to the ball of the eye, and the stools highly fœtid and of a dark colour. This cause operates more frequently when there exists a natural tendency to costiveness, and among such as are subject to worms. It is not however confined to them, but attacks occasionally individuals of every temperament. This affection of the eyes, in consequence of disorders in the alimentary canal, seems to depend upon that sympathy which subsists between

* Histoire Médicale de l'Armèe d'Orient, partie seconde, p. 11.

the tunica conjunctiva and the mucous membrane of the intestines.

Dentition.—Children are frequently distressed with sore eyes while teething, and the Ophthalmia induced seldom subsides until the pain in the gums be removed. This effect is in part the result of sympathy, but is chiefly occasioned by irritation communicated directly to the eye by the maxillary branch of the fifth pain of nerves.—Even among grown up persons, the irritation of a carious tooth not infrequently induces pain and inflammation in the eye of the affected side.

Preceding Diseases.—The influence which scrophula and lues venerea have in producing ocular inflammation, have been already considered. Besides these, there are a variety of other diseases which occasionally give rise to Ophthalmia, the chief of which are small-pox and measles.

The eyes not only suffer with the rest of the frame, during the continuance of small-pox, but the contagious matter sinks deeper, and lays the foundation of disorders in them, which continue

through life. St Yves observes, that small-pox gives rise to four kinds of disorders of the eyes, namely, inflammation of the conjunctiva, fistula lachrymalis, abscess of the cornea, and ulceration of the eye-lids *.

The first effect, or inflammation of the conjunctiva, generally accompanies the disease itself, and is most severe towards the close of the eruptive fever. When the attack is severe and of long continuance, it leaves a morbid disposition in the parts, which the slightest occasional cause is often sufficient to call forth; and the seat of the future disorder is determined by a variety of modifying circumstances. Thus, at one time the eyes appear to recover with the rest of the system, and to be affected only with a sense of weakness which is perhaps but little attended to. In a short time thereafter they begin to inflame, and the former train of symptoms is renewed. Conjoined with this irritative habit in the vessels of the eyes, if there happen to be present a scrophulous taint in the system, the eye-lids become the chief seat of the disease, and that modification of the affection de-

* Nouveau Traité des Maladies des Yeux, p. 160.

nominated Psorophthalmia, is produced. And so of the others.

Before the practice of inoculation became general, and in countries where the disease was little known, it raged with pestilential virulence. Captain Vancouver in his voyage to the north-west coast of America, states that the small-pox is very fatal to the Indians, and that many of them had lost the sight of their eyes from it *. It is now to be hoped however, that the benefical influence of vaccination widely extended, will ere long eradicate from the face of the earth this scourge of human kind.

The measles too leave behind them a disposition to ocular inflammation, which is rather of the erysepelatous kind. Ophthalmia is indeed a pretty general consequence of this disease, but it is seldom so violent as when occasioned by small-pox. The hooping cough also, has been known in some instances to induce disorders of the eyes, and weakness of sight.

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* Vancouver's Voyage, vol. i.

I have noticed already the connection between Ophthalmia and some diseases of the alimentary canal, as dysentery and diarrhæa, and endeavoured to trace the nature of the sympathy to which such a connection was referable. To the facts then stated, may be added the following observation by M. Larrey. When mentioning the causes of the Egyptian Ophthalmia, he says that the sudden suppression of a diarrhæa produces it; and states that he had frequent occasion to observe the operation of this cause, particularly after the campaign of Ssalehhieh *. To the same cause perhaps may be ascribed the alternations of Ophthalmia with the subsidence and elevation of tumours, the retropulsion and appearance of eruptions on the head and surface of the body, and similar occurrences related by authors.

The Suppression of customary Evacuations.—— When the system has been accustomed to a periodic discharge, it is easy to conceive that any interruption to its natural return should be attended with general uneasiness, and that some inflammatory disposition might manifest itself in parts where

* Relation Historique et Chirurgicale, &c. p. 24.

there was the least resistance opposed. The suppression of the catamenia lays the foundation of a variety of disorders, and among others, of Ophthalmia. This, I am convinced, is more frequently the case than is generally supposed, and its probable operation should never be lost sight of. I met once with a case of obstinate Ophthalmia, where the usual remedies were tried ineffectually, and where the suppression of the menses was denied and carefully concealed. The inflammation of the eyes began at last to abate, and the cure was rapid and complete. I was somewhat surprised at this sudden and favourable change; but I understood sometime thereafter, that it had been preceded by an abundant flow of the menses, Scarpa also considers it as a frequent cause of Ophthalmia, and Mr Ware's twenty second case of Ophthalmia seems to have been of this kind, although it does not appear that he considers it as such. The object of the case is to shew the advantage resulting from the internal use of the muriate of mercury in some cases of Ophthalmia. It begins thus:—"Mrs ——, about 45 years of age, whose menses for many months had been very irregular, was attacked in June last, with a violent inflammation in both eyes. This appeared to be

the consequence of a cold which she caught during the continuance of a rash upon her skin *." The case during its progress assumed an intermittent form, the pain and inflammation of the eyes becoming more violent every second day. Bleeding, blistering, and a variety of remedies were employed with little effect; but at last decided benefit appeared to result from the internal exhibition of mercury. The patient recovered, but the exact duration of the Ophthalmia is not mentioned, nor is there any further account given of the state of the menses.

It is probable that these intermissions might be tendencies to hemorrhagy, and that the mercury was chiefly useful in stimulating the vessels of the uterus to their periodic discharge. At any rate, the age of the patient seems to indicate a connection between the Ophthalmia and some uterine affection.

The suppression of the hemorrhoidal flux also is not an infrequent cause of Ophthalmia. Hoffman details an elaborate case of this kind, which occur-

* Chirurgical Observations, p. 228.

red in the person of a prince, and which proved fatal to vision. I have met with a similar connection, and I suppose it familiar to every one. A hemorrhagy from the nose is a frequent and almost a natural occurrence about the age of puberty in both sexes, and if prematurely restrained, headach, and inflammation of the eyes ensue. Its continuance however, much beyond that period of life, is to be considered rather as morbid.

Ophthalmia Onanistica quæ ex pollutionibus frequentioribus oritur.—I have known more than one instance where this practice had a decided influence in weakening the organs of sight. It is certainly more destructive in its effects on the general system, than even a much greater use of venery in a way more consonant to nature.

Tumours on the Eye-lids.—A variety of tumours and warty excresences grow occasionally upon the eye-lids, and by impeding their motion, operate as a source of irritation upon the ball of the eye. Warts are for the most part superficial, and are more inconvenient than painful. At times however, they adhere by a very broad base, and when irritated, assume a cancerous appearance and are

often of difficult removal. It is supposed that youth gives a predisposition to the growth of excrescences of this kind.

The common encysted tumour frequently occurs on both eye-lids. It varies in its consistence, and is in general slow in its growth; and seldom becomes painful unless its size affects the motion of the eye-lids. But when very hard, it may excite pain in another way. Mr Ware relates an instance of an Ophthalmia, produced by a chalkstone deposited on the membrane that lines the inside of the upper eye-lid. It occurred in a person of a gouty habit, and excited considerable pain, especially when the eye-lid was moved.

A small inflammatory tumour known by the name of stye, forms frequently upon the edges of the eye-lids, and is very painful. It generally terminates soon, and for the most part by supuration. In irritable habits however, it is sometimes a very tedious complaint.

Inversion of the Eye-lids.——The preternatural turning inwards of the borders of the eye-lids, by bringing the hairs of the cilia and the rough edges

of the tarsi in contact with the ball of the eye, cannot fail to excite inflammation, and it is not infrequently a cause of Ophthalmia. But the disposition to turn inwards, is I apprehend, itself, a consequence of former inflammation, and as such, therefore, might have been discussed when the affections of the eye-lids were under consideration. But as it has been generally placed among the causes of Ophthalmia, I shall not change the usual arrangement.

Mr Ware has been at much pains to investigate the nature and origin of this morbid tendency in the eye-lids, and as his observations on this subject are somewhat peculiar, and as they have been adopted by others, I shall examine them at some length. He says, " The upper lid and its ciliary edge, both in motion and at rest, are preserved in their natural situation, by the equal, though contrary actions of the musculus orbicularis, and levator palpebræ superioris. But the lower lid, whose motion is very small in comparison with that of the former, has no muscle correspondent to the levator of the upper, and is preserved in its natural state by the equal action of the orbicular fibres spread over it, and the counteraction of the

skin which covers it; in which last respect it differs materially from the upper lid, the skin of which, on the contrary, being very thin and flaccid, is incapable of any such counteracting power."

From the above account it is manifest, that when the trichiasis affects the upper lid, it must be owing to a relaxation of the levator palpebræ superioris, and a contraction of the superior part of the orbicularis; whereas, in the case of a trichiasis affecting the lower lid, it can only arise from a relaxation of the skin, and a contraction of the inferior part of the orbicularis. And, as in these two cases, the causes of the disorder are very different, so they will, of consequence, require a very different treatment. In the trichiasis of the lower lid, it will be necessary to increase the counteracting power of the skin which covers that lid, so as to prevent the contraction of the musculus orbicularis; whereas, in the trichiasis of the upper lid, it is necessary, in order to complete the cure, to give an additional stimulus to the levator palpebræ superioris, for the purpose of exciting it to its proper action *.

* Chirurgical Observations, &c. p. 94.

This reasoning appears to me highly fanciful, and to be founded on assumptions which need not be granted, and which, even if they were, could not explain the phenomena. The eye-lids, it is true, enjoy different degrees of motion, and that of the upper lid is the most considerable, and these motions are performed by muscular contraction; but they are preserved in their situation when at rest, by the general connection, and nice adjustment among themselves, of the different parts of the face. The elasticity of the skin is nearly the same in every part of the body, and the skin of the under lid does not, on dissection, appear to be thicker or stronger than that of the upper lid; but the former, resting on a cushion of cellular substance, exhibits a more firm and tense appearance. This is exemplified in the case of old people, where the under eye-lids appear loose and wrinkled, from the comparative less quantity of cellular membrane that formerly distended them. To admit, "that when the trichiasis affects the upper lid, it must be owing to a relaxation of the levator palpebræ superioris, and a contraction of the superior part of the orbicularis," implies, either, that this connection has been ascertained to operate uniformly, or,

that no other state of the parts could produce the affection. It is somewhat difficult however, to conceive how one portion of the same muscle should be spasmodically constricted, while the other part of it remains free and performs its functions: and that, superadded to this, another muscle in the immediate neighbourhood, sympathizing with it in its actions, should at the same time become paralytic, or in a state of complete and permanent relaxation. Analogy is surely adverse to this opinion. But even supposing that the levator palpebræ superioris were to be in a state of perfect relaxation, and that the superior portion of the orbicularis were at the same time to contract; the latter would naturally act in the direction of the axis of its fibres, and by doing so, may compress the ball of the eye, but it would not necessarily invert the eye-lid. Indeed, in many instances the levator palpebræ superioris appears to be paralytic, and the upper eye-lid hangs down over the eye, but does not become inverted from this single circumstance.

Nor is it easy to see how "a trichiasis affecting the lower lid can only arise from a relaxation of the skin, and a contraction of the inferior part

of the orbicularis." The former part of the contrast immediately recurs with a change of situation, that one portion of the same muscle shall be spasmodically contracted and act contrary to the line of its fibres, while the other performs its usual functions; and that the skin, which in the other instance had remained in its natural state should now be deprived of its elasticity, and become completely relaxed.

But the phenomena of the affection do not demand the interposition of gratuitous suppositions to explain them. The trichiasis is rarely, if ever, a primary affection, but is a consequence of previous inflammation. When the eye-lids have suffered much from Ophthalmia, or from a scrophulous or venereal taint in the system, an acrimonious matter is secreted by the glandulæ meibomianæ, which operates as a source of constant irritation, and ulceration takes place at the internal surfaces of both eye-lids. If the ulceration be considerable, there will be a loss of substance, and whenever the filling up depends upon the skin, there is always a contraction at the place where the cicatrix is formed. Thus, in the healing of any part

which is surrounded by the skin, as there does not appear to be any reproduction of that substance, a remarkable contraction is observed to take place. A cut in the lip, if left to itself, contracts greatly during the healing process; and after the operation of phymosis, such is the disposition in the parts to contract during the cicatrization, that it is sometimes difficult to prevent it, even by escharotics. Hence the healing of ulcers on the internal borders of the eye-lids will be attended with a contraction of the skin, in proportion to the extent of the ulceration, and this contraction will naturally invert the eye-lid, and produce the affection in question. The disposition when once induced is not easily checked, and the habit gains strength by duration. The reason why the under eye lid is more frrquently affected than the upper, seems to be its dependant situation, by which it comes in contact not only with the matter secreted from its own surface, but with that also from the upper lid, and thus becomes subjected to a more permanent irritation.

One or two of the hairs of the eye-lashes not infrequently turn towards the globe of the eye, and excite pain and inflammation in it; and in

some rare instances several hairs, in spite of every effort to the contrary, take a similar direction. This disposition it is sometimes very difficult to remove, but it is not connected with the tendency in the eye-lids to become inverted.—I think I have seen it occur more frequently where the hairs of the eye-lashes have been naturally very long, and which, becoming moistened by the humidity on the globe of the eye, naturally take this direction inwards. But on other occasions, the hairs originally incline inwards.

CHAPTER III.

TREATMENT OF OPHTHALMIA.

IN the general History of Ophthalmia two distinct stages of the disease were pointed out. The first was characterised by a sense of heat, acute pain, intolerance of light, and a florid colour of the vessels on the conjunctiva, indicating an increase in the action of these vessels, and of the quantity of blood in them. The second stage was distinguished from the first, by a sense of weight, obscure pain, and turgescence of the vessels, which in this state are of a dark or purple hue, indicating an action less than natural, and the consequence of this previous action. These are extreme points of vascular action, which occur in every part subjected to inflammation; but there are various gradations in the series of arterial action, which this range embraces, from the first commencement of pain and redness, to the last degree of chronic inflammation. These changes, it is the object of the medical practitioner to trace, and to distinguish accurately from each other, and his success in the treatment will be in proportion to the precision of such discrimination.

Various theories have been proposed to explain the proximate cause of inflammation. These it is not my intention to examine, nor are such investigations of much importance in a practical point of view. The admission of any demands an assumption which we are not warranted in making, and the treatment of a disease which is founded on such principles, is at best but conjectural. The usual definition of the proximate cause of a disease, is "that which present forms the disease, which, when changed, changes—and which, when removed, removes the disease."—— But this, in other words, is the disease itself, and is surely an inaccurate expression for a change which is supposed to precede its appearance. But admitting the distinction, what single cause can account for the various phenomena of a disease, for, from the very nature of the definition, it should be competent to the explanation of them all?

In another point of view, the proximate cause of any morbid derangement, as the words themselves imply, should be considered, the last effect in the series of cause and effect employed in the production of that change. But even this is so closely

connected with the disease itself, that it is next to impossible to separate them; for the successive changes which take place in organized bodies during the generation of disease, are perpetually modified by circumstances, which neither experience can enable us to judge of, nor which themselves afford just principles to reason from. Could we even ascertain the nature of this link, in any one instance, such a knowledge would not enable us to destroy the catenation of the whole series in every succeeding similar case: for it would be liable to perpetual variation, and we should still be ignorant of the influence which it possessed over those which had preceded it.

The investigation of the proximate cause of diseases has therefore naturally enough, proved hitherto but an unsucessful research. An attentive consideration of the phenomena which disease exhibits will better enable us to judge of the nature of the individual changes which take place, and of the indications of cure which they point out.

To maintain uniformity, and to render the subject as perspicuous as possible, I shall, with little deviation, follow the same order in the treatment

which I have adopted in the history of the disease; and a comprehensive view of the management of Idiopathic Ophthalmia will naturally shorten the discussion of the cure of the other varieties.

SECTION I.

OF THE CURE OF IDIOPATHIC OPHTHALMIA.

Whatever may have been the primary cause of that inequality in the balance of the vascular system that induces inflammation in any part of the body, I think it must be received as a fact, that the vessels of that part are at the commencement, and for sometime thereafter, in a state of increased action. This susceptibility of a local increase in the action of the smaller arteries might be inferred from their increased contractility as they recede from the heart, and from their comparative greater degree of sensibility, but it appears to be actually demonstrated by the phenomena of Ophthalmia. Thus, without preceding headach, observable irregularity in the pulse, or any mark of general excitement, the eye becomes suddenly painful, and the conjunctiva is covered with blood

vessels which are in some instances ruptured, from a momentary excess of their action, and in some instances all these symptoms subside rapidly, without even a hemicrania having been induced. But if the local inflammation continues, the irritation is communicated to the larger trunks, and the superficial temporal, and frontal arteries of the side affected, swell, and at first, a partial, but soon after a general headach, ensues. Hence then, as far as we can observe in the instance of all others most open to inspection, this increase of action commences first in the smaller arteries, and from them is communicated to the larger ones, and therefore the first and most obvious indication of cure is to endeavour to moderate this action, and to diminish the quantity of blood in the vessels of the part.

In the case of a very slight attack, such as occurs in some of the shades of that variety which I have denominated *Ophthalmia Mitis*, little more often is necessary, than to avoid every source of external irritation, and to bathe the eyes in cold water. But when there is considerable pain, and general redness of the conjunctiva present, the duration of the disease will be much abridged by the timely employment of topical blood-letting.

Of all the modes of practising this evacuation, the division of the vessels on the conjunctiva and eyelids, is by far the most effectual. This may be easily accomplished with a common lancet, or still more safely by means of a very sharp round edged knife, some what shaped like a lancet, but not pointed. The upper lid being drawn up and held firmly by an assistant, the surgeon should fix the under one with the forefinger of his left hand, and then desiring the patient to move his eye in different directions, he can scarify the vessels with perfect safety to any extent, taking care to cut as near the root of the trunks as possible. To ensure as abundant a discharge of blood as the case will admit of, the eye should be bathed for some time after in luke-warm water *.

The quantity of blood obtained by scarification, however carefully performed, is seldom very considerable; yet I have repeatedly witnessed a more marked remission of the pain and inflammation to result from even a few drops obtained in this way,

* By luke-warm water, I mean water between 84 and 92 degrees of Farenheit—tepid water, between 92 and 100—and hot water, as an application to the eye, between 100 and 112.

than from several ounces discharged at the temples. The complete division of several of the distended nervous fibrillæ, which maintain the pain and irritation effected by this operation, no doubt contributes to this remission. But the principal part of the relief which ensues, must be ascribed to the direct depletion of the vessels, which this mode of evacuation alone can secure. In slighter affections, one scarification is generally sufficient, but in the more violent degrees of Ophthalmia, especially in the Egyptian Ophthalmia, it is necessary in many instances to repeat this operation different times.

The beneficial effects of scarification depend in an eminent degree upon the period of the disease selected for its employment. This it is of great importance correctly to ascertain, and the following is the result of my experience on this subject. When the vessels on the conjunctiva and eye-lids appear round, small, and have a florid colour; when the patient complains of intolerance of light, and acute pain in the globe of the eye, and before any puriform discharge has come on, scarification is safe and beneficial and should be repeated until the symptoms remit. But when the vessels have a purplish hue, appear much dilated, and the pa-

tient complains of a sense of weight and fulness, even although no purulent discharge has taken place, that the same remedy is hurtful, and instead of advancing, often materially retards the cure. These distinctions should be carefully attended to, especially in the Egyptian, or more aggravated forms of acute Ophthalmia. In these latter cases, the inflammatory action runs rapidly very high, and the natural tone of the vessels seems to be lost in a very short time. In some instances it is irrecoverably so, and although the person continues to see objects dimly, yet his eyes remain red and spongy, and the slightest irritation brings on an increase of pain and inflammation. Scarification therefore, when the vessels of the eye are in this state of great local weakness, frequently gives rise to an extensive ecchymosis, increases the tumefaction, and protracts the cure.

The difficulty of making a nice discrimination in this respect appears to me one great reason why so many medical gentlemen in Egypt were adverse to the use of scarification, and a proof of its utility when properly administered. The invasion of the disease is often so sudden, and the progress of the inflammation so uncommonly rapid, often giving

rise to the puriform discharge in the space of an hour, that the surgeon has seldom the opportunity of seeing the disease at its commencement. But as the serous effusion, purulent discharge, and occasional ulceration that take place, are so many leading and undubitable proofs of previous inflammatory action, no doubt can exist as to the propriety of topical blood-letting in the early stages of the disease, as the best and most effectual means of averting these consequences. The time left for deliberation is very short, but so convinced have I been of the benefit resulting from early scarification, that in the Ophthalmia which raged in the Argyleshire regiment, I have repeatedly stopped the soldiers on their march to scarify their eyes the moment they applied to me; and so satisfied were they of its salutary effects, that notwithstanding the exquisite pain attendant on the operation, they voluntarily returned and requested a repetition of it. Indeed I am firmly persuaded, that if there be any means of arresting the progress of the inflamtion in that violent and destructive variety of Ophthalmia, it is scarification of the vessels on the globe of the eye itself; and when performed early, and duly repeated, I have never known it fail of

success. The Egyptians themselves practice this mode of topical blood-letting *.

The same cautious restriction is perhaps unnecessary in the common Ophthalmia, as it generally appears, and scarification may be performed at a much latter period with success. In this latter variety, the inflammation is seldom so violent, and never so rapid in its progress; and even after it has continued for a considerable length of time, the organization of the part is but little changed. But the above limitation should always be kept steadily in view, and it may be received as a rule applicable to every case, that in an attack of genuine idiopathic Ophthalmia, when the inflammation has passed into the second stage, that scarification is pernicious.

When the eye-lids are the chief seat of the disease, this operation may be practised with the utmost facility. The upper eye-lid being secured by an assistant, the operator may turn the under one outwards with the point of his finger, and then

* Ceresole—Histoire Médicale de l'Armèe d'Orient, partie seconde, p. 50.

with a lancet divide the turgid vessels on its surface. In scarifying the upper-lid however, the round edged knife will be found more convenient than the lancet. In determining the period of the disease for scarifying the eye-lids, the same attention must be paid to the degree of inflammation present as in the case when the conjunctiva is affected. An ill-timed scarification even of the eye-lids is frequently productive of much mischief.

The objections to scarification of the eye in acute Ophthalmia, I consider as perfectly groundless. No remedy can be useful if misapplied, and here a very nice degree of discrimination is necessary to select the proper period for its employment. The irritation which it excites is momentary, and is amply compensated by the relief which it affords. An ecchymosis is seldom a consequence of this operation when early performed, and I never knew it productive of any uneasiness. But if delayed until the vessels are turgid with blood, it gives rise to extravasation of considerable extent. The sudden and complete relief which is obtained by this operation demonstrates the locality of the inflammation.

There is another mode of blood-letting, purely

topical, which has been long practised, but more lately recommended by Mr. Ware. It is the removal or excision of a portion of the tunica conjunctiva including the turgid vessels on its surface. This author considers this mode of proceeding as preferable to a simple division of the vessels, as the latter is less likely to destroy completely the continuity which prevails *. But he has mentioned it merely as a mode of diminishing the quantity of blood in the vessels of the eye, without particularizing the circumstances under which it ought to be employed.

In the first or inflammatory stages of Ophthalmia it appears to me to be altogether inadmissible. The pain and irritation excited by the operation, and the motion of the eye-lids over these bare surfaces, is often uncommonly great; and sometimes they terminate in ulcers, which are troublesome to heal. Nor is it more effectual in procuring a discharge of blood than the simple scarification, which can be frequently repeated; for the coagulable lymph effused soon closes up the divided vessels, while the tension and tumefaction induced, operate

* Chirurgical Observations, &c. p.p 40, 41.

as a new source of irritation. I have seen it practised with success in the second stage of Ophthalmia, where, after a long continued disease, the vessels had been gorged with blood, and were in a varicose state, and when the removal of a portion of the conjunctiva appeared necessary. When it is thought proper, however, to perform this operation, it may be conveniently done, by elevating the vessels to be divided with a hook or tenaculum, or even with a forceps, and then with a pair of scissars to cut off the portion so raised; and this process may be repeated as often as shall be found necessary.

This operation may be performed under similar circumstances upon the eye-lids, and it is particularly useful where they have become enlarged, and have acquired a fungous appearance, so as often to produce a species of ectropium. The removal of a portion of this fungous substance in such a case, not only produces a discharge from the vessels of the part, but so diminishes the size of the eye-lid as to admit of its being restored to its natural situation. In performing this operation, the eye-lid should be turned outwards, and held firmly by

an assistant, and care should be taken not to wound the tarsus.

With the view of lessening the quantity of blood sent to the eye in cases of Ophthalmia, it has been a frequent practice with surgeons to open the temporal artery, and this operation has been considered by many as productive of the most salutary effects. As there is great reason, however, to believe that the inflammation is confined for a considerable time to the vessels which ramify upon the conjunctiva, and as the temporal artery is neither the only nor the principal source of blood to the eye, we can scarcely expect immediate or decided benefit from such an operation, viewed as a distinct and positive means of relieving this complaint at its commencement. Even after the total division of this blood-vessel enough of blood will be sent to the eye to maintain the morbid action already existing, unless indeed such a quantity were abstracted as to weaken the general system; and I believe few instances have occurred where such relief as had been expected from its use has been actually obtained. Conjoined with a still more topical evacuation, and deferred until a more advanced period of the disease, greater advantages

may be expected from it. Thus when the irritation has been communicated to the larger trunks, as takes place in relapse, or in the more obstinate forms of this affection, marked by a renewal of the pain and headach, the opening of the temporal artery may produce the most salutary effects, but at the commencement subjects the patient to unnecessary pain, and the surgeon to inconvenience in stopping the hemorrhage, without any adequate advantage.

Yet much has been urged in favour of this practice, even in the early stages of Ophthalmia, chiefly from the idea that the temporal artery was a principal source of blood to the eye. "Opening the temporal artery," Mr Ware observes, "is on all hands allowed to be a mode of bleeding the most effectual, as well as speedy, for the purpose." But the difficulty he adds, of obtaining in this way a sufficient quantity of blood, or of at all times commanding the hemorrhagy, prevent its being generally used *. In the next page however, having stated the inefficacy on some occasions of other modes of local blood-letting, he adds "It has been judged necessary to make a complete transverse

* Chirurgical Observations, &c. p. 36.

division of the temporal artery, which has been preferred to barely opening it, as the division would not only cause a derivation of the blood from the part affected, but must also cut off a principal source by which the inflammation was constantly fed, and in this mode of proceeding, I have known great relief to be almost instantaneously given to the patient, on whom all other applications had proved ineffectual; and without any bad consequence whatsoever."

A view of the distribution of the vessels which supply the eye will enable us to judge how far this reasoning is accurate. The temporal artery, which appears to be a continuation of the external carotid, having detatched branches to the cheek and face, divides, a little above the zygoma, into two large branches. The anterior branch advances in a waving manner, spreading out its numerous ramifications upon the temples and upper part of the forehead, a few of which only reach as far as the orbit, where they communicate by anastomosis with corresponding twigs of the facial artery. It is this anterior branch, and not the trunk of the temporal artery, that is usually opened. The posterior branch ascends obliquely backwards, and is dispersed over the integuments and

muscles, upon the lateral parts, and crown of the head. The ocular or Ophthalmic artery comes from the internal carotid, enters the orbit through the foramen opticum of the sphenoid bone, and supplies the fat, muscles, ball of the eye, and tunica conjunctiva, and, as its name implies, is the great source of the blood which distends the vessels of the adnata in cases of inflammation of the eye.

The temporal artery therefore, is a very subordinate means of supplying the eye with blood, and and the practice of dividing it, with the view of cutting off a principal source of blood to that organ in cases of Ophthalmia, is founded on a mistaken notion of its distribution. The derivation too in this case will be found to be inconsiderable; for the blood must come from the inconceivably minute anastomoses which the branches of this vessel form with those of the facial artery, and that too by a very circuitous rout. Indeed, wherever I have seen this frontal branch divided, the bleeding has almost immediately ceased when the finger was pressed upon the trunk, without any compression being made upon the divided end communicating with the eye. Nor in cases where arteriotomy is practised does it appear evident why a transverse division of an artery should be prefer-

red to an oblique opening into its cavity. The natural shrinking of the vessel, owing to its muscular power, diminishes its area, and retiring into the surrounding cellular substance, a coagulum is formed at its divided ends, which in a short time shuts them up. And this is what actually takes place in cases of hemorrhagy from wounded arteries, when they are not of the larger size. So long as the vessel is not fairly cut across, blood issues with violence from the wound at every renewed pulsation of the heart; but when the division is rendered complete, a few jets follow, an oosing succeeds, and very soon after the bleeding ceases altogether.

The concluding part of the paragraph quoted, seems to support the opinion which I entertain, that although this practice is in itself insufficient in the first stages of Ophthalmia, effectually to relieve that complaint, yet that it may be highly useful when employed at a more advanced period; and the relief obtained from its use, as stated by Mr Ware, was, after every other method had failed, when the disease had been of considerable standing.

It has been asked, " whether compression of the temporal artery will relieve the symptoms of Ophthalmia * ?" The idea seems to have been suggested from a supposition, that this vessel is a principal source of blood to the eye. But, at any rate, the degree of suppression sufficient to obliterate the cavity of an artery would naturally, by its pressing at the same time upon the contiguous nerves, act as a new source of irritation, which it ought to be our endeavour to remove. Let any one, in the case of a severe headach, forcibly compress the temporal artery with his finger. He will indeed experience a momentary relief from the pain, but it will return with augmented severity when the finger is removed. Besides, such compression, by impeding the circulation through the anastomosing branches, must tend, in a certain degree, to accumulate the blood in the vessels of the part affected, rather than to lessen it, and thus operate in aggravating the symptoms of a disease which it was meant to alleviate.

A considerable quantity of blood may be taken away by opening the nasal vein, which passes on

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* Wilson on Febrile Diseases, vol. iii. p. 295.

the side of the nose, near the internal angle of the eye. But this is not so direct nor effectual as the scarification of the vessels on the conjunctiva. It is preferable to the last method in some cases, as it occasions a considerable depletion without much inconvenience in the stopping of the hemorrhage. Many individuals, however, would permit this operation, who might be adverse to a lancet being applied to the ball of the eye; and in the aggravated forms of the Egyptian Ophthalmia, where copious local evacuations appear to be so obviously indicated, it may be considered as a safe and valuable auxiliary.

Cupping, with scarification at the temples, is another method of obtaining blood in large quantities from the vessels in the neighbourhood of the eyes. The depletion, although immediate, is not direct, considerable pain attends it, from the numerous nervous fibrillæ which are cut or punctured, and headach is no infrequent consequence; and, notwithstanding that this mode of bleeding is practised by many, for whose opinion I entertain the highest respect, I confess it has never appeared to me to answer the end proposed, so well as some of the other more simple means. In the early stages

of Ophthalmia, when the pain and irritation are great and unremitting, this operation would be improper; for if it failed in relieving the symptoms, it would certainly aggravate them. This mode of bleeding is better adapted to cases of long continued Ophthalmia, where there takes place a decided determination to the eye, and where headach is an urgent symptom. When properly performed, any quantity of blood may be taken away, and if employed under the circumstances already mentioned, it is often productive of good effects.

Bleeding, by means of leeches, is preferable to the former mode, as the remedy comes nearer to the seat of the disease, and it can at all times be employed with ease and safety. It is peculiarly well adapted to the case of timid patients, who feel a certain horror at the sight of any thing like a surgical instrument approaching them. The blood is drawn off however, in this way in too gradual a manner to produce a decided change in the more violent kinds of this complaint, but it seldom fails to give relief; and this abatement of the pain and tension may be in part ascribed to the consequent fomentation with luke warm water, with which this mode of bleeding is usually accompanied. In ge-

neral, I have found the leeches most effectual when applied upon the eye-lids. A considerable degree of tumefaction, and sometimes even of pain succeeds the application of the leeches, and this for a time is a source of some degree of uneasiness. It may in part be owing to the increased tendency of blood to the part, which the act of sucking has induced; or to a slight degree of irritation from the bite of the animal. Neither however are of long continuance, and this may be considered as a very pleasant and an easy mode of topical blood-letting.

General blood-letting is seldom necessary in cases of Ophthalmia, and unless the quantity taken away is uncommonly great, it scarcely diminishes the local inflammation. If the patient be plethoric, and there appears any determination to the head, beyond what the local inflammation might be supposed to induce, it no doubt may be proper to take away blood from the arm according to the urgency of the case; but in pure Ophthalmia, this is comparatively rare. The general febrile irritation is purely symptomatic, and it is surprising to observe with what rapidity it declines when the local inflammation subsides. It is not so much the quantity of blood as its sudden destraction that is useful,

not only in Ophthalmia, but in almost every case of inflammation. This is the only mode of blood-letting which may be employed in every stage of the disease. At the commencement of an attack it will moderate the force of the general circulation, and render more effectual the local evacuations. In the more advanced stages, when headach and general fever prevail, its use is not less obvious. But, as stated above, it should not be wantonly practised. The patient may be very much weakened without the local affection being sensibly relieved.

To co-operate with the effects of the local depletion, and to determine from the head, purgative medicines should be exhibited. Of these the neutral salts, such as the tartrite of potash, tartrite of potash and soda, phosphate of soda are the best. They should be given in doses proportioned to the age of the patient. Severe purging is certainly improper, but the bowels should be kept in an open state. Besides being in themselves refrigerant, and therefore tending to moderate the force of the circulation, purgative salts, by stimulating the alimentary canal, may bring into play that sympathy which has been stated to exist between the

eye and the mucous membrane of the bowels, and may in this way contribute to the removal of the local inflammation. Conjoined with these evacuations, and immediately after the detraction of blood, different kinds of collyria should be employed. Among the best are solutions of the accetite of zinc *, or of lead †, and while the inflammation is purely active I have invariably found them most beneficial when used lukewarm.

I have been long in the habit of employing the different sedative, or discutient solutions, as they are denominated, in cases of acute inflammation in a lukewarm or tepid state. I was first led to

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* R Sulphatis Zinci grana xxiv.
Aquæ ℥iv.
Solve.
R. Acetitis Plumbi grana xxxii.
Aquæ ℥iv.
Solve.
Miscantur solutiones; quiescant paulisper; dein coletur liquor.

† R. Acetitis Plumbi ℥ss.
Aquæ ℥viii.
Acidi acetosi Destillati ℥ij.
Solve Acetitim Plumbi in aqua; dein addito acido, per chartam cola.

adopt this practice, so contrary to received opinion, from observing, that often when I had wished to apply ten or a dozen leeches to an inflamed part, not more than one or two could be induced to fix, and that, to solicit as copious a discharge of blood as possible from these small openings, long continued fomentation with tepid water was necessary. But I was surprised to find frequently, that the pain, swelling, and tension, had abated nearly as much as if the leeches had operated to the extent proposed; and that during the fomentation, the patient felt always an agreeable remission of the painful symptoms, which generally returned when the cold lotions were employed. I was gratified to find, that similar views had been entertained by Messrs Ware and Noble, and as these gentlemen have had extensive opportunities of observing the effects of different remedies in Ophthalmia, this coincidence appears to me to be a proof of the propriety of the practice.

Even simply bathing the eye in luke-warm milk and water is often productive of the best effects, and on some occasions sufficient of itself to diminish the inflammation in a slight attack. Indeed, in a great proportion of cases of common Ophthalmia colly-

thia are the means chiefly resorted to for its cure; for in private practice, topical blood-letting, especially scarification, is looked upon as a very formidable operation. In all cases these fomentations should be frequent and long continued. A soft well prepared poultice too, moistened with the collyrium, and inclosed within the folds of a thin linen or muslin handkerchief may be laid over the eyes at bed-time. It is often inconvenient from its weight, but if it can be at all tolerated, it is generally a useful application.——It tends to diminish the tumefaction of the eye-lids, and prevents the ichorous glue effused from their surfaces from closing them up. The introduction of any mild liniment between the eye-lids at bed-time contributes to the same effect.

During the first or acute stage of Ophthalmia, the most agreeable temperature of the fluid is lukewarm. This may at any time be ascertained by actual experiment. In cases of inflammation however, in other parts of the body it should not be under tepid. But when the inflammation has subsided completely, and local weakness exists, the solution should be of the temperature of the air, and often it is necessary to cool it artificially.

It is difficult to explain the mode in which heat operates in diminishing inflammation. Mr Ware, by endowing it with opposite qualities, acommodates it to every case. Thus, according to him, weakness is often the result of pain, and heat by removing the pain acts as a tonic. At one time debility is occasioned by too great fulness, and at another by the rigidity and tension of the parts, and heat in removing these morbid states acts in different ways *. This theory is not very luminous, but is, perhaps, just as satisfactory as if we were to refer the operation of heat to certain assumed laws of vitality. The splendid views of Brown, and the ingenious speculations of Darwin, however plausible in the abstract, are constantly at variance with disease in detail; and are therefore to be admired more for their beauty than for the extent of their application. A careful observance of individual appear-

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* Chirurgical Observations, &c. p.p. 67, 68.

The operation of heat must, I apprehend, in every instance be the same; but its sensible effects will vary with the state of sensibility in the part to which it is applied ——It expands every body into which it enters, by producing a separation of its particles, and it is possible, that by weakening the force of cohesion in a certain degree, it may diminish sensibility.

ances, and an unremitting attention to the sensations of the patient, must still be deemed the chief foundations of medical practice.

When, by a steady and persevering use of the remedies just recommended, the acute inflammation has been shortened, the disease frequently declines rapidly and little more is necessary than to guard against any new cause of irritation. Often however from the violence of the inflammation in the first stage, such a degree of debility, accompanied with irritation, has been induced, that the management becomes extremely tedious, and the cure doubtful. The eye now assumes a different aspect, and instead of the florid scarlet colour which the vessels of the conjunctiva had, they appear of a purplish hue, and gorged with blood. The patient complains of a headach, a sense of weight and great weakness of sight.

These appearances indicate the loss of tone, which the vessels on the conjunctiva have sustained, while the force of the larger trunks has been but little impaired. Our object in this case should be to take off the determination to the eye, and to endeavour, by local applications, to restore to the vessels their lost tone. The first of these inten-

tions is often answered by blisters applied to the forehead and temples; and when employed under the circumstances just mentioned, seldom fail to relieve the headach, and to lessen the determination to the eye. Mr Ware recommends the blisters to be applied to the temples immediately after the bleeding, and often upon the very spot on which the leeches had fixed; and he observes, "that the sooner the blister has followed the bleeding, the more efficacious both have proved *."

Where the topical bleeding had been deferred until the disease had passed into the second stage, I have little doubt but that some advantage might have resulted from the rapid succession to each other of these remedies; but I can scarcely think that they would be beneficial in the first stage;—and as Mr Ware has not in a single instance specified the peculiar circumstances under which these remedies were exhibited, his directions cannot be viewed as accurate rules of conduct.

Blisters in acute inflammation are at best but a doubtful remedy. Even in perfect health a blister excites a great degree of pain, and general uneasi-

* Chirurgical Observations, &c. p. 46.

ness, and if applied in the immediate neighbourhood of an inflamed superficial part, not infrequently enlarges the sphere of the inflammation, augments the pain, and very often hastens the process of suppuration. But if it so happen that it has produced vesication, without any considerable pain having been induced, the discharge which follows, and the new disposition which the parts acquire has often the effect of relieving the first inflammation.——Thus, in cases of pneumonia, a blister at one time resolves the inflammation, and at another aggravates the symptoms. If, by the external inflammation which it excites, it fail to take off the determination to the more internal parts, it must in every instance be productive of pernicious effects.

From a careful observation of the opposite effects of blisters in Ophthalmia, I am persuaded, that if applied in the first stages of that disease where the inflammation is purely active, they will be found in a great proportion of cases to aggravate the symptoms; but if reserved until it has passed into its second stage where headach, and local debility prevail, will in general be productive of the most salutary effects.

On some occasions it is necessary to repeat the blister frequently, or to keep up the discharge which has been induced by the use of a little issue-ointment. It is, however, not only unpleasant, but very unconvenient, to keep an issue on the temples; and therefore, when this remedy is found to be necessary, it may be transferred to the nape of the neck. I have known an issue on the crown of the head extremely conducive to the cure of long-continued ocular inflammation.

The collyria, which may be employed, should, in this second stage of the disease, be cold, or of the temperature of the atmosphere *. If used tepid or

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* Although cold, strictly speaking, be the mere absence of heat, and consequently a negative power, yet in its operation on the living system, it is both stimulating and astringent. This is proved by the shrinking of parts subjected to its influence, and by the unpleasant sensations which it excites. It does not operate simply by reducing the temperature of a part to which it is applied; for if it did, it would be a valuable remedy in every case of inflammation, as, by abstracting the excess of that power, it would remove a principle source of the irritation Great degrees of cold, no doubt, long applied, would diminish inflammation, but the experiment would be a dangerous one, and of very doubtful event. Cold appears therefore, better fitted to be used as a tonic, than as a means of deminishing pain and inflammation.

luke-warm, when the inflammation has passed its acmé, they increase the sense of weight and fullness, and add to the tumefaction. This, however, does not preclude a momentary immersion in tepid or hot water, as a stimulating application. A solution of the sulphate of zinc forms an excellent lotion, which should be used frequently *. A solution of the acetite of alumina is another, which I have often seen productive of good effects where the local debility was considerable, and where an astringent application was indicated †.

But if conjoned with weakness, there be present obscure pain and irritabillity, some antispasmodic or sedative application becomes necessary. Of the remedies of this class, opium is by far the most

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* R. Sulphatis Zinci, grana x.
Aquæ, ʒvi.
Acidi Sulphurici diluti guttas, x.
Solve Sulphatem Zinci in aqua; dein addito acido, perchartam cola.

† R Sulphatis Aluminæ, ʒss.
Aquæ, ʒiv.
Solve.
R. Acetetis Plumbi, ℈i.
Aquæ, ʒiv.
Solve.
Misceantur solutiones; quiescant paulisper; dein coletur liquor.

efficient, but it requires great care in the administration, and its use should be confined exclusively to the second stage. It may be employed either in the form of infusion in water or in that of tincture. The watery infusion is peculiarly well adapted to those states of the eye, where pain and irritability prevail without any remarkable degree of weakness *. A few drops insinuated between the eye lids at bed time are often highly beneficial. They produce a smarting sensation, accompanied with a glow of heat. These sensations however soon subside, and the eye feels stronger next morning.

But when the tone of the vessels is more deeply affected, and particularly if the watery infusion produces but a slight effect, the tincture itself may be employed, but at first in a diluted state. One part of the tincture of opium † and two

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* R. Opii, grana iii.
Aquæ Bullientis, ℥i.
Macera per horas duodecim, phiala sæpe agitata, dein per chartam coletur liquor.

† Tinctura Opii sive Thebaica (Ph. Ed.)
R. Opii uncias duas.
Alcoholis diluti libras duas.
Digere per dies septem, et per chartam cola.

parts of water form an excellent application to succeed the use of the watery solution, and like it should be exhibited guttatim. As successive applications however diminish the force of the impression, the proportion of water may be gradually lessened, until the tincture itself be used. But as this is so stimulating a substance, it should be cautiously administered, and its effects accurately observed.

While the first smarting is speedily succeeded by a glow of heat, a flow of tears, and a remission of the pain, and the eye exhibits a brighter aspect, the remedy should be repeated, but seldom oftener than once in twenty-four hours; and its strength should be again diminished as the violence of the disease begins to abate. But if the sensation of heat continue longer than usual, if the flow of tears be more sparing, and if considerable pain be induced, it is then unsafe to venture on a repetition of it; indeed, an incautious exhibition of it under these circumstances might bring back the symptoms of the inflammatory stage.

The ultimate effect of opium in this, as well as in other diseases is to blunt the sensibility of the part to which it is applied and thus to diminish

pain and irritation. This substance however, in its primary operation, is evidently stimulating. Even that portion of it which water takes up, impresses the organs of taste with a pungent sensation, and when applied to the eye excites pain in it. When dissolved in a menstruum of spirit of wine and water, more of its active matter is disengaged, and its stimulating properties are increased. Its use is therefore peculiarly indicated where this combination of pain and weakness exist.

From the previous violence of action which takes place in cases of inflammation, and the distention which ensues, the vessels of the part are left in a state of extreme local debility. But their organization is supposed to be still entire, and with it their susceptibility of being restored to their former tone; and to obtain this it requires a nice adaptation of remedies, both as to their kind and quantity, to the varied states of the inflamed part. Care and attention are equally requisite in the administration of a stimulating substance, whether we view the vessels of the part to which it is to be applied as in a state of debility, or as having their irritability accumulated. We must neither hastily expend this supposed excess of life, nor exhaust the little strength that remains.

Mr Ware is very indiscriminate in the use of the tincture of opium, and he remarks, that whether the remedy will be useful or not, "can only be determined by making the trial, which is attended with no other inconvenience than the momentary pain it gives. When it is found to produce no good effect, the use of it must be suspended, until evacuations, and other proper means, have diminished the excessive irritation; after which it may again be applied, and bids equally fair for success as in those instances in which it never disagreed *."

In cases of chronic debility, attended with frequent exacerbations, as occur in the scrophulous Ophthalmia, such trials may be comparatively harmless, and on some occasions productive of good effects; but in a case of acute inflammation, where the pain and the irritation are the result of an increased action of the vessels of the part, such an experiment may not be simply inconvenient, but it may be attended with serious consequences. Mr Ware's third and fourth cases of Ophthalmia illustrate sufficiently the mischief which ensues

* Chirurgical Observations, &c. p p. 52, 53.

from an ill-timed application of the tincture of opium, and the uncertainty that attends the simultaneous exhibition of opposite remedies.

It is no doubt extremely difficult and often impossible, to define with precision those particular states of any diseased organ when a remedy can alone be useful; but to attain this precision is the sole object of the healing art, and I apprehend that this desireable accuracy is at last to be obtained by avoiding the errors into which undeviating empiricism leads; by combining together a number of particular details, and carefully appreciating the general result. In no class of diseases do we attain to so much precision in their management as in those denominated acute, and especially in external inflammation. The changes which the parts undergo during this process are, in the great majority of instances, uniform and steady; and a careful attention to their augmentation in volume, pain, temperature, colour, and above all to the feelings of the patient, both local and general will enable us, to ascertain with considerable accuracy the degree of inflammation to which they are at any time subjected. From not specifying accurately every symptom and appearance of a dis-

ease, and stating the particular circumstances under which certain remedies were exhibited for its cure, arises that perplexing diversity of result which every day occurs in the practice of medicine, and which but too well justifies the observation that "the treatment of diseases can furnish nothing but a result always uncertain, often deceitful; nor can this uncertainty be dissipated, and all the causes of illusion compensated, but by an infinity of cures perhaps by the experience of successive centuries."

It sometimes happens that a more generally stimulating application than a few drops of the tincture of opium, allowed to glide over the eye, becomes necessary, where successive relapses have greatly weakened the vessels of the part. An excellent remedy of this kind is formed by mixing together, one part of brandy, and two parts of water. Put the mixture into an eye-cup or broad brimmed wine glass, and let the eye be immersed open in it. Gin and whisky do very well, employed in the same way, but if the brandy can be obtained good, it is preferable to either, as its strength is more uniform and equal.

I have seen very beneficial effects result from the use of a lotion composed of equal parts of port wine and water, applied in the same manner as the former. This mixture possesses a fine combination of stimulating and astringent properties, and is peculiarly useful where there is any viscid exudation from the surface of the eye or eye-lids.

From what I have observed, I think bed-time the most convenient period for the employment of these stimulating lotions, and as they are similar in their operation to the tincture of opium, the same limitations as to the period of their employment should be attended to, as recommended with regard to it; and the proportion of the stimulating ingredient should vary with the effect produced. The common astringent collyria may be frequently employed in the intervals in a cold state.

The last local stimulant which I shall mention is electricity. This should be cautiously administered, and the best and safest mode of employing it is in the form of gentle sparks taken from the eye. It sometimes produces a momentary relief, but seldom any permanently beneficial effect.

Besides general blood-letting and gentle purges, there are but few remedies affecting the general system, of much utility in the cure of Ophthalmia.

When the symptoms of the inflammatory stage have been subdued, and if the patient complains of great pain and general irritation, opium should be given in doses proportioned to his age. It would no doubt be safest to limit the employment of this substance to the second stage of the disease; but if the headach and other feverish symptoms are so urgent even after the use of antiphlogistic remedies, as to induce watchfulness and slight delirium, opium must be had recourse to from the commencement. It generally has the effect of moderating the pain and inducing sleep, and in some instances its continued use has produced the happiest effects. More commonly, however, the remission is but temporary, and when the operation of the opium has ceased, the pain and local inflammation are renewed. It is therefore in acute Ophthalmia, what it has been too often found to be in other inflammatory affections, a temporary and doubtful resource against unexpected occurrences.

Sea-bathing, as invigorating the system in general, is an excellent remedy, and I have seen it often very useful in the cure of Ophthalmia. The saline matter which the water of the sea contains, is also a moderate stimulus, and being regularly applied, eminently contributes to the cure.

These are the chief remedies which we have to trust to in the cure of Idiopathic Ophthalmia. Many others, either inert in themselves, or of doubtful operation, have been recommended by the favourers of nostrums. But it is not the number and diversity of medicines prescribed for the cure of diseases, on which success depends; but on the periods selected for their employment. In virulent Ophthalmia, as in Pneumonia, and Enteritis, the timely exhibition of one or two remedies arrests the progress of the symptoms, and disposes to a speedy and favourable termination of the disease. But if delayed too long, or imperfectly administered, so as only to interrupt, but not to destroy the morbid action existing, the very texture of the parts concerned becomes changed, new and more obstinate symptoms supervene, and at last the whole materia medica can do little more than palliate the most urgent of them.

Treatment of the Psorophthalmia.

I have stated, in the history of this variety, that the eye-lids are often from the very beginning the chief seat of a primary attack of Ophthalmia.—Of this I have seen several instances, where the inflammation has not only come on suddenly, but where it has continued a considerable time without affecting the tunica conjunctiva.

When the pain is severe, and the inflammation runs high, the eye-lids should be scarified, and the different collyria already recommended, should be also employed. But the inflammatory stage, strictly so called, is soon over, and there ensue a succession of slight excerbations, which keep the eye-lids in a state of constant tension and tumefaction. Partly owing to the loose texture of the membrane of the eye-lids, and from the circumstance of the ciliary glands being affected, and the matter discharged, possessing an acrimonious quality, ulceration, takes place along their whole internal surfaces.——In slighter cases before ulceration has taken place, and while the principal symptom is a morbid discharge from the eye-lids

and borders of the tarsi, which glues them together during the night-time, a little of the Unguentum Oxidi Zinci * applied at bedtime frequently checks the tendency to effusion, and together with the frequent use of cold astringent collyria during the day, on many occasions effect the cure of the complaint. But if ulceration has taken, it becomes necessary to employ remedies of a more powerful kind. The Unguentum Nitratis Hydrargyri Fortius †, has long been justly celebrated in this affection; it is generally of a very firm consistence, and requires to be slightly melted before it be applied. This is easily done,

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* R. Linimenti simplicis, ℥vi.
Oxidi Zinci, ℥i.
Tere diligenter in mortario, donec optime misceantur.

† As this is a valuable application in cases of ulceration of the eye-lids, I shall give the formula for its preparation, in the last edition of the Edinburgh Pharmacopœia:—

R. Hydrargyri purificati partem unam
Acidi Nitrosi partes duas,
Axungiæ Porcinæ partes duodecim.

Digere Hydrargyrum cum Acido Nitroso super arenam ut fiat solutio, quam calidissimam adhuc misce cum Axungia Porcina liquefacta, et denuo frigescente; strenue dein misturam subige in mortario vitreo, ut fiat unguentum.

Unguentum Nitratis Hydrargyri Mitius.
Fit eodem modo cum Axungia triplice.

by taking a little on the finger and holding it before a candle, or the fire, when the necessary liquefaction is soon accomplished. In recent cases, where the ulceration is slight, the Unguentum Mitius is perhaps the preferable application.

There is another ointment of the stimulating kind much recommended in ulceration of the eyelids, the Unguentum Oxidi Hydrargyri Rubri *. Either it or the former is a highly useful application, and may be employed with the same view. Bedtime is the period generally selected for their application, and it is certainly the best; and their good effects are sometimes ensured more effectually, by bathing the eye in tepid water previously to the application of the ointment.

But it sometimes happens that even these ointments, although they alleviate some of the symptoms, are unable to cicatrize the ulcers. In such cases I have seen the following application highly useful:—Dissolve fifteen grains of the sulphate of copper in an ounce of water; take a hair pencil

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* R. Oxidi Hydrargyri rubri per Acidum Nitricum, ℈ij.
Axungiæ Porcinæ, ʒi.
Tere diligenter in mortario, donec optimè misceantur.

and dip it in this solution, and having turned the edge of the lid outwards, apply it to the ulcerated surfaces only. Keep the eye-lids in the same situation, and with a syringe and lukewarm water wash away the redundant solution. The sulphate of copper I have found, on many occasions, a specific in inducing cicatrization, and of the present strength does not operate as a caustic on a sound part.—But the surface of the eye is so tender and delicate, and the application itself is so stimulating, that it is necessary to use it cautiously.

When the first or inflammatory attack has been pretty smart, so that ulceration has been induced early, the conjunctiva becomes affected in a similar manner, and if due care be not taken during the cicatrization, they adhere together. This adhesion for the most part takes place between the upper lid and the ball of the eye, by which means the motions of the latter are impeded, and vision is impaired. Having directed an assistant to raise the border of the tarsus, the surgeon should, with the fingers of one hand, firmly fix the disengaged eye-lid, and with a small round-edged scalpel in the other, proceed by cautious dissection to remove the adhesion. As he advances in the operation, the

assistant should continue to raise and draw back the lid from the ball of the eye; and after the few first incisions, the complete separation is easily accomplished. When the bleeding has ceased, a little of the unguentum oxidi hydrargyri rubri should be introduced between the eye-lid and the ball of the eye, and care taken, by an occasional renewal of it, to prevent a similar adhesion from taking place.

The tincture of opium, and the spirituous collyria, are seldom so useful in this complaint, as when the conjunctiva is also affected; but if pain be urgent, the tincture of opium may be applied in the manner already recommended. Considerable relief is often obtained from bathing the eyes frequently in cold water twice a-day. It induces an agreeable sensation, and tends to check the purulent effusion. General remedies appear of little use in the cure of Psorophthalmia.

Treatment of the purulent Eyes of new-born Children.

Every symptom of this malignant variety of Ophthalmia demonstrates the violence of the in-

flammation and the rapidity of its progress, and calls for an early and unremitting employment of the antiphlogistic course, particularly topical blood-letting. Mr Ware is of a very different opinion, and he remarks that "an increased discharge, from the minute pores of the conjunctiva seems to constitute the first stage of the complaint, and this symptom, without doubt, indicates the necessity of immediately constringing the relaxed vessels, in order to check the redundant discharge *." But he admits however, that on some occasions he has found it necessary to take blood from the temples, and to scarify the eye-lids with a lancet.

I regret that I have been obliged to differ so often from such respectable authority, but I have had no other object in view by it than the attainment of truth. The present opposition of practice I am disposed to refer to the difficulty of discriminating between the stages of the disease. But the acute pain, sudden thickening of the conjunctiva, scarlet colour of the parts, and the puriform discharge, are all leading marks of active inflammation, and demand the early employment of those means which most effectually resolve it. Of these topical blood-let-

* Chirurgical Observations, &c. p.p. 132, 140.

ting is the best. The eye-lids should be scarified with a lancet, and leeches applied in the neighbourhood, and fomentation with luke warm or tepid water to promote the depletion.

It was mentioned, when detailing the symptoms of this variety, that the bilious vomiting and black fetid stools which occur, indicate some affection of the alimentary canal, upon which it may in some measure depend. I am very much inclined to adopt this opinion, and with that view recommend repeated doses of calomel proportioned to the strength of the infant. To procure sleep and to diminish pain, opium may be given, but only as a last resource. Pediluvium continued for ten minutes is very often an excellent succedaneum, and is a safe remedy.

The purely inflammatory stage soon runs its course, and that of great debility succeeds. In this case one of the best remedies is a blister to the temples. To check the copious puriform discharge, powerful astringent collyria should be employed. I have found a decoction of oak bark extremely useful. Mr Ware recommends the aqua camphorata of Bates's Dispensatory; and it is an excellent application. If these shall prove in-

effectual, a more powerful styptic will be found in a compound solution of the sulphates of copper and alumina *. As the eye-lids are generally glued together and very much swelled, the common mode of bathing the eyes is a very imperfect way of applying the solution. It should therefore be introduced by means of a syringe, and in this stage of the affection should be cold. Indeed when once the purulent discharge has fairly commenced, the syringing should be applied repeatedly, and every idea of blood-letting in any shape be then abandoned. To help to keep the eye-lids open, a little of the unguentum oxidi zinci should be introduced between them at bed-time, and if in the morning, notwithstanding this precaution, the eye-lids shall be found adhering together, no violent attempts should be made to separate them; but previously to employing the astringent injection, the glutinous matter should be washed away by means of some bland oleaginous fluid. A lit-

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* R. Sulphatis Cupri.
Sulphatis Aluminæ aa, ℈i.
Aquæ, ℥x.
Acidi Sulphurici diluti gt. xx.

Tere in mortario paulisper, ut solvantur sulphates, dein per chartam cola.

tle fresh butter, or a few drops of olive oil diffused through tepid milk, will be found to answer this purpose very well. If conjoined with this state of vascular debility there exist pain and irritability, the tincture of opium may be employed under the restrictions already mentioned.

One of the most troublesome attendants on this modification of Ophthalmia is a disposition to eversion of the eye-lids, producing what has been denominated ectropium, which is aggravated by the crying and agitation of the child; and it is often very difficult to retain them in their natural situation. It should be attempted however, by frequently applying a compress wet with the styptic solution, and keeping them in that situation by the hand of an assistant. It sometimes happens that after the puriform discharge has ceased, that this tendency in the eye-lids continues, arising from the thickening and fungous structure of the internal membrane forcing them outwards when the eye is hastily moved, and not infrequently attended with inflammatory exacerbations. When in this state, repeated scarification alternated with the use of the unguentum nitratis hydrargyri mitius at bed-time are the most effectual remedies with

which I am acquainted. If there be no permanent thickening of the eye-lids producing this affection, these remedies will in general be sufficient for its cure, but if that should be the case, a portion of this funguous substance must be removed by the scissars; and this latter mode seldom fails of success.

Treatment of Intermittent Ophthalmia.

I have considered this as an idiopathic variety of Ophthalmia, as I am unable to trace any other disease on which it depends; but I have little doubt that it will be found to be connected with some other morbid state of the system. I very much suspect that it is connected with a disordered state of the alimentary canal, as I have generally observed costiveness a constant attendant; but in the treatment of it, I have never pushed the use of purgative medicines the length that perhaps might be necessary for its removal.

With the view of checking the disposition to intermit, the peruvian bark may be exhibited in the intervals, and before the accession of the paroxysms; and to interrupt the local morbid action, the tincture of opium may be applied in the manner

already mentioned. Some benefit may be derived from the long continued use of an issue behind the ear.

SECTION II.

TREATMENT OF SYMPTOMATIC OPHTHALMIA.

Having discussed, at considerable length, the modes of operation, and the periods for employing the different remedies in the cure of Idiopathic Ophthalmia, I shall not in this section repeat any of the general views then stated, but confine myself to those peculiarities in the local inflammation which the primary disease appears to induce.—— Following the arrangement adopted in the history, the first that falls under consideration is the Scrophulous Ophthalmia.

Treatment of the Scrophulous Ophthalmia.

There is scarcely a single substance in the whole materia medica which has not, at one time or other, been recommended as useful in the cure of Scro-

phula; but sad experience has demonstrated the inefficacy of them all. From a careful observation of the phenomena connected with the scrophulous diathesis, we learn that there almost always exist a laxity of structure, and a strong tendency to obstruction in the lymphatic system. The management of this affection is therefore chiefly prophylactic; and moderate exercise in the open air, sea-bathing, chalybeate waters, and the use of a mild nutritive diet, are the points chiefly to be attended to. But while we attend to these more general means of invigorating the system, the local affection must not be overlooked.

A first attack of Ophthalmia in a person of a scrophulous habit, as not differing very essentially from what occurs in individuals, where no such disposition exists, must be treated in the manner recommended for idiopathic inflammation. It is only when it assumes a chronic form, and the eyelids are chiefly affected, that it ought to be considered as arising from scrophula.

Sea-bathing in the summer season is a most valuable remedy. It strengthens the general system, and the salt water acts as a local stimulus to the

relaxed and debilitated vessels.——Indeed I have known individuals who, during the bathing season, recovered entirely from an Ophthalmia of this kind, but who regularly suffered a relapse in winter and spring.

Before ulceration has come on, the stimulating applications are peculiarly serviceable; and I think those formed of a mixture of any spirit, or of wine and water, are more beneficial than the tincture of opium. The eye should be immersed, open, in an eye-cup or wine glass, containing the lotion, so that it may be applied suddenly, and over the whole surface of the eye and eye-lids. It should be used every night, and for a considerable time, but not exactly in the proportion recommended for the cure of the second stage of Idiopathic Ophthalmia *.—One part of spirit will be found sufficient for three or four parts of water; for the vessels in this variety of Ophthalmia are so liable to be excited, and

* Instead of the terms active and passive inflammation, which have been in general employed to illustrate the different appearances which the eye assumes in Ophthalmia, I have preferred throughout, the expression of first and second stages of the disease, as being less apt to mislead, and being in reality more correct.

to have their tone exhausted, that it requires considerable care and attention to appreciate duly the strength of the stimulating remedy. I have seen instances where one or two applications even of this stimulating lotion have restored the eyes to a state of comparative health; but which the slightest intemperance in drinking, or a too long exposure to a breeze of wind, have been able to undo, thus demonstrating the circumscribed and local nature of the inflammation in Ophthalmia.

During the employment of these stimulating collyria, the eye and eye-lids are subjected to frequent local exacerbations, but unless when pretty severe, they should not interfere with the use of this remedy. Bathing the eye in tepid milk and water is generally sufficient to remove both pain and irritation; and if it should not, the eye-lids should be scarified, and a little of the unguentum oxidi hydrargyri rubri applied at bed time. These remedies, although very opposite in their effects, and improper if exhibited together in any stage of genuine Idiopathic Ophthalmia, are often highly beneficial in this state of chronic inflammation where there take place a succession of exacerbations and remissions.

It is not unusual to observe as a consequence of long continued chronic inflammation, extravasations of blood between the external laminæ of the conjunctiva, which the absorbents not being able to take up become a source of irritation. This too is an effect of a violent attack of acute inflammation, particularly of the Egyptian Ophthalmia. When this is the case, the separated portion of the conjunctiva should be removed by means of a hook and a pair of sharp scissars, and the eye bathed in some astringent solution.

When ulceration takes place on the eye-lids, the treatment is more difficult and the event more uncertain. Scrophulous ulcers seldom shew a disposition to heal in any part of the body, and particularly when situated on the eye-lids, where they are exposed to so many stimuli peculiar to that organ. But a great deal of the ill success which attends the treatment of these ulcers, arises from a want of steady perseverance for a sufficient length of time in the use of appropriate applications. Both patients and practitioners are apt to be discouraged when the disease does not yield readily to the means employed for its removal, and are disposed to abandon as incurable, what a little more pains would

have accomplished. The best applications are the ointments into which the nitrate of mercury enters as an ingredient, and they should be applied at bed-time. In the morning, if the discharge has been considerable during the night, and if the lids have been glued together, they should be bathed in some tepid oleaginous fluid, and effectually cleansed by means of a syringe. The ointment should then be again applied, and the patient should wear a shade of light-green gauze before his eyes. In obstinate cases, recourse may be had to a solution of the sulphate of copper, already mentioned. An issue too, on the nape of the neck, is often productive of salutary effects, but it is not so beneficial, if applied at any considerable distance from the head.

That disagreeable turning outwards of the eye-lids, termed Ectropium, sometimes accompanies the scrophulous affections of the eye-lids. It may be induced by different causes, as dropsical swellings of the lids, tumours on their internal surfaces, and the like. When once the eye-lid however, is pushed out a little from its natural position, the external skin appears to accommodate itself to this compressing power, and it contracts in the same

proportion, so as in a short time, to prevent the return of the lid to its natural situation, even after the deranging cause has been removed.

When Ectropium arises from an enlargement or tumefaction of the internal surface of the eye-lid, a portion of it should be removed, as already recommended, and a strong astringent lotion frequently applied. If the complaint is recent, this will be sufficient for its cure; but if it has been of long standing, and connected with a retraction of the skin, it will be necessary to divide the skin freely, and to prevent the edges of the wound from approximating until the eye-lid returns to its natural position.

Many persons besides those in whom a scrophulous diathesis is present, complain of a swelling of the eye-lids, and general uneasiness in the morning, upon getting out of bed; although, during the day, they enjoy comparatively, good health.—In such cases I have seen decided advantage result from bathing the eyes in cold water, before going into bed, and taking, at the same time, a large draught of the same fluid. I consider the practice of attempting to strengthen the eyes by the use

of spectacles, and different kinds of bandages, where no radical defect in the organs of vision exists, in general hurtful, and often a cause of weakness of sight. When there is a mal-configuration of the cornea, such auxiliaries may be useful, but otherwise they often increase the debility which they were intended to remove.

Of the Venereal Ophthalmia.

The radical cure of morbid affections arising from the presence of a venereal virus in the system, can only, as far as we yet know, be effected by the use of mercury. But as this remedy is unpleasant and even hurtful in its operation, it should not be prematurely administered. When other parts of the body, besides the eyes are affected, and when we are acquainted with the previous habits of the individual, we can seldom be at a loss to discover the true cause of the general disorder. But when the affection of the eyes is the only indication of a venereal taint in the system, as the progress of the inflammation is extremely slow and insidious, the disease has often gained considerable ground before its real nature has been even suspected. It sometimes happens too, that

the long continued use of mercury for the cure of venereal affections has given rise to Ophthalmia, which continuing after the former had been removed has been considered as depending on them. An attentive consideration of the symptoms which have been stated as characterizing it, will in general enable us to form a tolerably accurate diagnosis.

As a general remedy, the corrosive muriate of mercury is perhaps the best of any. It is a very active preparation, and is useful in some cases of Ophthalmia where no venereal taint is present. It may be exhibited in doses of one fourth part of a grain in the course of the day, either in the form of pill or of solution. To obviate the pain and general uneasiness, opium must be given at bed-time in doses proportioned to the age of the patient. The best local applications are those which tend to keep the parts easy and clean, for as we can hardly expect more than a temporary relief while the venereal poison exists in the system, substances of a more active kind produce irritation. With this view the eye and eye-lids may be bathed frequently in luke-warm milk and water, and a little of the unguentum oxidi zinci should be ap-

plied at bedtime. When we have reason to believe that the general affection has been removed, we may then have recourse to local remedies of a more efficient nature.

The Gonorrhæal Ophthalmia demands from its commencement the most unremitting attention; and in no case of ocular inflammation, is there more necessity, in its early stages, for frequent and liberal topical blood-letting. The rapidity of its progress, and the copious puriform discharge that so speedily ensues, prove that the inflammation is of the most active kind, and there is no means so effectual in checking its progress as local depletion. But here a very nice discrimination is necessary. If the puriform discharge has come on, even although the pain be acute and the eye has a florid colour, scarification, so far from being of use, will be productive of the most pernicious effects. Under such circumstances it excites a great degree of pain, increases the irritation, and augments the tumefaction. It is only at the very beginning of an attack of this kind, that this highly valuable remedy can be useful, and at that period of the disease I have no doubt of its efficacy.

When the puriform discharge has begun, we must

have recourse to remedies of an astringent nature. A solution of the acetite of alumina, or a decoction of oak bark are useful applications in this case. As cold is itself a cause of irritation, these solutions should be used for the first three or four days luke-warm; and as the tumefaction of the eye-lids is often very great, and as it is absolutely necessary that the remedy should be applied to the seat of the disease, a syringe will be found a more complete means of exhibiting them, than by simply bathing the eye in the liquid. This should be done frequently in the course of the day; not merely with the view of constringing the vessels and destroying the morbid tendency to effusion, but to prevent the acrid matter from remaining too long in contact with the eye. With the same view, Scarpa recommends a solution of the corrosive muriate of mercury, in the proportion of a grain of the salt to six ounces of water. But, as an astringent application, I would give the preferrence to those recommended above, particularly the solution of the sulphates of copper and zinc; and stimulating lotions should be deferred until every symptom of acute inflammation has subsided.

With the view of changing the seat of inflam-

mation, and thus relieving the eye, it has been suggested to endeavour to solicit a return of the discharge from the urethra. Swediaur considers this the most speedy and effectual means of diminishing the ocular inflammation, and he says that he has frequently had the satisfaction of seeing it succeed without the aid of any external application *. The instance too stated by Dr Lange, and mentioned in the history of the symptoms of this affection, is eminently in point. Scarpa also, is favourable to the practice; and in the case related by Dr Robertson, the first favourable change in the symptoms was connected with a return of the discharge from the urethra. These are all strong facts in support of the propriety of this practice, and as the eye is threatened with destruction, and the experiment not attended with any danger, we should not hesitate about making it, and that too as early as possible.

To take off the determination to the eye, blisters should be applied to the temples, and repeated according to the urgency of the case and the effects produced. An opiate at bed-time will be

* Traité Complet, &c. tom I. p. 164.

found necessary from the beginning, and the bowels should be kept open by some neutral salt.

When the inflammation subsides, and the discharge begins to diminish, if the pain be considerable, the tincture of opium may be employed in the manner already mentioned, and, provided the structure of the conjunctiva has not been materially affected, the steady and cautious administration of this useful stimulus restores it in the course of a month to its former state. But the eye remains long weak and tender, and seldom recovers in perfect integrity its wonted faculties.

But when the fleshy excrescence on the conjunctiva shews no disposition to resolution, and advances on the cornea, a portion of it should be removed by the scissars. The use of astringent lotions, and a careful protection of the eye from every source of external injury, in a short time thereafter, accomplish the cure. But our chief confidence must rest on the timely employment of topical blood-letting, and a steady perseverance in the use of astringent applications.

Although not in strict conformity with my arrangement, yet as being more simple and convenient, I shall, in this section, consider the treatment of those modifications of Ophthalmia which appear to depend upon the influence of a particular cause, which being in general limited and peculiar in its operation, and originating for the most part in the system itself, the affection to which they give rise may, without any violation of propriety, be considered as symptomatic.

Foreign Bodies entangled in the Eye.—When a foreign body entangled in the eye excites pain and inflammation in it, we cannot expect that either will subside until the extraneous body shall have been removed. Nature herself often effects this by the process of suppuration; but on the eye this is a dangerous termination, and should be prevented if possible by a timely interposition of art.—— The means to be employed must be regulated by the nature of the substance itself.

If particles of dust of any kind have been introduced between the eye-lids and ball of the eye, a stream of lukewarm milk and water, applied by means of a syringe, will be sufficient to dislodge

them; and this operation should be repeated as long as we have reason to believe that any remain. But the water should not be thrown with a jerk, but in a slow and steady stream. If the substance be of a larger size, and loose, the point of a quill is the best instrument that can be used for its removal. But if it be of an angular shape, it should be laid hold of at once with a delicate forceps; and unless when the body is impacted in the substance of the eye or eye-lids, this instrument is the one that will answer in most instances. If, however, the adhesion of the foreign body to the eye, or the eye-lids, be so strong as to resist these efforts to dislodge it, the sharp point of a probe may be employed to raise it a little, so as to enable the surgeon to lay hold of it with the forceps, when it may be easily extracted. But if, from its shape, it cannot be disengaged even by these means, the opening at which it points must be enlarged by a knife or the point of a lancet, so as to bring it fairly into view, when no further obstacle occurring to detain it, its removal may be accomplished.

Such an incision is frequently productive of disagreeable consequences, when it happens to be made on the cornea, for unless great care be taken to prevent it, the iris is apt to protrude at the

wound, and to produce a species of staphyloma.—This effect we must endeavour to counteract, but the foreign body should at all events be removed. Mr Noble indeed, mentions an instance where a bit of iron, of considerable size, had remained for some time on one side of the lower part of the cornea. The cornea had healed completely over, and it seemed to give the patient little or no pain *. But this is a very rare occurrence.

In cases where animalcula, by lodging on the tarsi, excite inflammation in the eye-lids, the Unguentum Oxidi Hydrargyri Rubri is the most effectual application. The milder ointments frequently have but little effect.

External Violence.—In the case of a blow having been received, little more can be done at first than merely to keep the eye easy and relaxed, by bathing it frequently in lukewarm milk and water, avoiding external irritation, and keeping the body open by cooling laxatives. If the blow has not been a very severe one, the only disagreeable effect which it produces, is an effusion of blood be-

* A Treatise on Ophthalmy, p. 138.

tween the folds of the conjunctiva, and in the cellular membrane on the eye-lids and parts adjacent.

The first may be removed by a constant application of any of the more gently stimulating lotions already recommended for the cure of the second stage of Idiopathic Ophthalmia. The external ecchymosis may be discussed by the camphorated spirit of wine, applied with the finger to the part, taking great care that it do not come in contact with the eye, or the internal membrane of the eye-lid: But by far the most effectual application in such a case, is the bruised root of the *Convallaria Polygonatum*, or Solomon's Seal, as it is vulgarly denominated. In taste, this substance resembles a walnut, is aromatic, and slightly pungent. Its powers in inducing a disposition to absorption in the parts to which it is applied, are truly astonishing. I have seen a few applications of this substance discuss an ecchymosis which had resisted for a considerable time every other remedy employed for its removal. This effect must no doubt be ascribed to the just degree of strength of its stimulating properties.

A puncture is frequently productive of very great pain, and although producing but a slight external injury, becomes dangerous from the internal parts, which may have been implicated. In such a case, however, we can do little more than attempt to allay pain, and diminish the general irritation. Blood-letting, both general and topical, should be employed, from the danger that the inflammation may be communicated to the brain.—Saline purges and the use of opium, to keep the bowels easy and to procure rest, should not be omitted.

When the cornea or sclerotic has been penetrated by a wound, part of the aqueous humour almost always escapes; and on some occasions even the vitreous. But as we have already seen, the total loss of both, although an alarming occurrence, is not necessarily attended with any danger to sight. But if the iris protrude at the wound, from the great sensibility possessed by that organ the patient is not only distressed with the most excruciating pain, but he is in danger of loosing the faculty of vision. If the wound be small the difficulty of returning the protruded parts is very great, and the pain occasioned by such attempts

is altogether insupportable. The eye inflames and swells, headach and general fever supervene, and very often delirium is induced. The most powerful general remedies have little effect in diminishing the violence of either the pain or the inflammation.

In such a combination of circumstances, there seems to be no alternative left, but to attempt, by the destruction of the protruded part, to destroy its sensibility altogether.——With this view caustic applications have been recommended, and their beneficial effects are often great beyond expectation. The nitrate of silver answers the purpose extremely well. It is rapid in its operation, and, if cautiously applied, its corrosive action may be limited to the protruded parts. A slight eschar follows, a moderate stimulus is communicated to the edges of the wound, and cicatrization speedily takes place.

If the wound has been made in the sclerotic alone, little inconvenience results from the cicatrix that is formed; but a cicatrix on the cornea, by its interrupting and changing the direction of the rays of light, often impedes vision.

A striking instance of the beneficial effects of caustic applications, in the case of a protrusion of the iris, occurred lately to Dr Kellie:—A man employed at the Glass-work at Lieth was accidentally struck on the left eye with a bit of glass, which was immediately removed. It penetrated both sclerotic and cornea towards the external angle of the eye, forming an opening of about three lines in length. A considerable portion of the iris had protruded, the conjunctiva was very generally inflamed, and the patient complained of the most exquisite pain. Attempts were made to reduce this species of hernia, which would have been accomplished, but the pain which they occasioned was altogether insupportable.

General and topical blood-letting were practised, and opiates were exhibed without producing any relief, and at last delirium supervened.—— Finding these remedies ineffectual, and the symptoms urgent, he applied the nitrate of silver to the protruded iris, and in a short time every symptom subsided. The wound gradually healed, but the iris adhered to the cicatrix, and had an oval shape and ragged appearance. During two months which the patient remained under Dr Kellie's care, he

saw objects imperfectly, the eye remained weak, but hopes were entertained that his sight might be in some measure recovered. But he returned to his work, neglected to call as he had been accustomed to do; and when the Doctor last saw him, a complete opacity of the cornea had taken place, and vision appeared to be irrecoverably lost.

Disordered States of the Stomach and Bowels.—The connection between Ophthalmia and disordered states of the alimentary canal has long been noticed, and there can be little doubt of their alternating with each other on many occasions. The French surgeons consider these disorders of the alimentary canal as of very frequent and effective causes in the production of Ophthalmia.

I have seldom found it necessary to employ local applications in the cure of this variety of the disease, further than bathing the eyes in luke-warm milk and water. I have not seen emetics useful, unless when they had also a purgative effect; but purgative medicines should be freely exhibited. Of these the neutral salts are the best, and to maintain the determination downwards, the patient should take, for some days successively, any mild but ef-

ficient laxative at bedtime. The common aloetic pill is very well adapted to the case of adults, and the submuriate of mercury may be given to children.

Dentition.—The inflammation of the eye in consequence of dentition seems to be purely a sympathetic action; and the first step towards a cure is, to endeavour to remove the irritation from the gum. This is best done by scarifying it with a gum fleam, which often at once produces a decided relief. When Ophthalmia depends on the irritation excited by a carious tooth, although the symptoms may be palliated by the use of opium, the extraction of the tooth is the only radical cure.

Preceding Diseases.—I have already considered the treatment of Ophthalmia when it depends on the presence of scrophula and lues venerea. Smallpox and measles seldom or never give rise to any symptoms which the history of Psorophthalmia does not embrace, and the hooping cough produces nothing peculiar.

When the affection of the eyes appears to be connected with the sudden disappearance of some

cutaneous eruption, we must endeavour to relieve it by soliciting a return of the suppressed discharge. With this view there is nothing more effectual than the warm bath, and the use of a diaphoretic medicine at bed-time.——Among children, where there occur pustular eruptions on the hairy scalp, when they dry up rapidly, the eyes are very apt to become affected. In this case, conjoined with the use of the general remedies, the head should be shaved, and gently rubbed over with some mild ointment, and, as Mr Ware recommends, the child should wear for some time an oiled silk cap.

The Suppression of Customary Evacuations.—The suppression of the menstrual or hemorrhoidal flux, has often been the apparent cause of inflammation of the eyes. When this connection has been ascertained to exist, we should endeavour to restore the natural discharge. —— In the case where a suppression of the menses is the cause, Scarpa recommends, as the most effectual remedy, the application of leeches to the labia pudendi. Leveillé, the translator of his work, relates in a note, a case where a similar practice was successful. The principle is no doubt well founded, but it is not likely to be so generally adopted, as perhaps it should

be. There is less objection to this remedy, when the affection of the eyes depends upon the suppression of the hemorrhoidal flux. If it should fail, however, we must have recourse to the general applications in Ophthalmia.

Tumours on the Eye-lids.—When an encysted tumor, by its size, so impedes the motion of the eye-lids, as to induce pain and inflammation on the ball of the eye, it should be removed. Different views have been entertained as to the mode of effecting this. By some it has been recommended simply to lay open the cyst, and evacuate its contents, after which it is said that the tumour entirely subsides, and that the edges of the wound coalesce and the cure is complete. Others recommend the extirpation of the cyst and all its adhesions. Mr Noble is an advocate for the former mode. Scarpa, Ware, and others, prefer the latter.

In some instances, where the tumour is deep seated, and is soft to the touch, it may be sufficient merely to evacuate its contents; and if this be all that is necessary, it will certainly give less pain and incur less risk of leaving a scar, than if extirpation had been practised. But if the tumour feels hard, and has a broad adhesion, as there is

scarcely a possibility of discussing it, and as perhaps it does not contain any fluid matter, we should not hesitate in removing it with the knife.

In removing tumours from the eye-lids, it has generally been the practice to make the incision on the external side of the eye-lid, and by the help of a hook or dissecting forceps to separate it from its adhesions; and when the bleeding ceases, to approach the opposite sides of the wound together, and retain them in that situation by means of adhesive straps. When the operation is performed with neatness and accuracy, the parts heal by the first intention, and the scar is hardly perceptible.

Scarpa, however, recommends that they should be extirpated from the internal side of the eye-lids, and says, that in this way the operation may be performed with more ease, than by the other mode, and without any chance of disfiguring the face *. It is true also, that such tumours in a great proportion of cases are situated much nearer to the surface of the internal membrane of the

* Traité Pratique, &c. tom. i. p. 154.

eye-lids, than to its external surface, although to the touch they appear to be placed immediately under the skin: and in endeavouring to remove them, one is often surprised at the depth to which it is necessary to go, before they can be disengaged from their attachments. If therefore, the tumour be small, and if it be situated towards the centre of the lid, it may be easily removed, by turning outwards the eye-lid, and retaining it in that position by the fingers of an assistant, while the operator proceeds to remove it. But if it be of considerable size, and placed near the angle of the eye, such a mode of proceeding would be attended with inconvenience from the difficulty of obtaining access to it.

Inversion of the Eye-lids.—When considering the causes of Ophthalmia, I objected to the opinion of Mr Ware respecting the nature of trichiasis, and I shall now follow out these observations in discussing its treatment.

An inversion of the upper lid, Mr Ware conceives, must be owing to a relaxation of the levator palpebræ superioris, and a contraction at the same time of the superior part of the orbicularis;

and he endeavours to illustrate this supposition by relating a case that occurred to Mr Broomfield, on which the opinion seems in some measure to have been founded. That gentleman was consulted respecting a very bad case of trichiasis, which occurred in the person of a young man of eighteen years of age, which had been of long standing, and which appeared to him to be occasioned not by any superfluity of skin, but by a relaxation of the levator palpebræ superioris. Impressed with this belief, he "made an incision through the integuments of the upper lid, from the inner angle of the eye to the outer; he then separated the fibres of the orbicularis, so as to denudate the expanded fibres of the elevator muscle, as near to their termination in the edge of the lid as possible; which being done, he applied a small cauterizing iron, adapted to the convexity of the globe of the eye, and made pretty warm, by passing it two or three times over the tendino-carnous fibres *." The trichiasis was cured, although "the eye-lid was kept constantly higher" than Mr Broomfield could have wished.

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* Chirurgical Observations, &c. p. 194.

But although Mr Broomfield succeeded in curing the trichiasis by this operation, it does not follow that it could not have been effected by any other means. He has not stated the origin of the complaint, nor what the appearances were which led him to suppose that the skin was not affected. The affection seems to have been cured by the cicatrix produced by the cautery, which, destroying a portion of the skin, caused a very considerable contraction of it, and this naturally changed the direction of the tarsus. But it appears to me to have been a mistake to cauterize the levator palpebræ; for such an operation, instead of rousing it to its proper action, was calculated to produce a strong and permanent adhesion to the parts adjacent, which indeed took place.

But Mr Ware's own practical recommendations are at variance with his theory; for he is among the first who have recommended an obvious, but ingenious application in the case of an inversion of the upper eye-lid. It consists in applying "a compress, about the size and thickness of the first joint of the little finger, under the arch of the orbital process of the os frontis, and confining it in this position, by means of a narrow bandage fastened

to the compress, and carried obliquely round the forehead *." The skin of the upper lid should be drawn up previously to applying the compress.—Such an application, however, could have very little effect upon this complaint, if it were really caused by a relaxation of one muscle, and a contraction of another. It seems to result as a consequence of the effect of the compress and bandage, that the affection consists chiefly in a doubling inwards of the skin.

The lower lid is much more frequently inverted than the upper one; and in this instance, according to Mr Ware, it depends upon a relaxation of the skin, and a spasmodic contraction of the under part of the orbicularis. But was the affection produced by the joint operation of these causes, the practice of removing a portion of the skin, with the view of inducing a cicatrix on it, would in all probability increase the disposition to contraction in the orbicularis, by the additional irritation which such an operation would induce; and as no action of the skin could counteract the contraction of the muscle, this operation could only remove one cause

* Chirurgical Observations, &c. p. 94.

of the complaint, which might therefore still remain after it had been performed.

But it appears, from an attentive consideration of the phenomena of the affection, that the muscles of the eye-lids are seldom implicated; and indeed if they are so at all, it is more likely to occur after the trichiasis has continued some time, than at its commencement; for it is on several occasions merely partial, and the inversion is confined to one part of the border of the tarsus only. The disposition of the eye-lids to invert is in the great proportion of instances produced by a contraction of the internal membrane of the eye-lids, from the cicatrization of small ulcers; and the cure of the affection depends on producing a large external cicatrix, which, by operating in an opposite direction, shall overcome the action of the internal one, while attention is paid at the same time to the healing of the ulcers on the surface of the eye-lid.

With this view, the practice of removing a portion of the skin, appears a rational one, and the following is the mode in which it may be effected. Having placed the patient in a favourable

position, and having extracted any hairs that may have been left on the tarsus, the surgeon should raise up between his fingers, or by means of a forceps, such a portion of the skin as he conceives can be spared, so as to ensure the effect of the future cicatrix. To enable him to judge correctly, Scarpa directs, that after having raised up this fold, he should desire the patient to open his eye, and if the tarsus and cilia resume their natural position, he may be assured that he has included the just quantity of the skin *. The next point to be attended to, is that the fold of skin so elevated, corresponds in length with the inverted portion of the tarsus, so that the cicatrix to be formed may not be partial in its operation. Having ascertained these points, the operator should remove the raised portion of skin at once, by means of a pair of sharp scissars.

Bell and Ware recommend a suture to be applied to keep the edges of the wound in perfect contact. Mr Ware in particular relates different instances, in which he appears to have performed this operation, and to have used sutures with great

* Traité Pratique, &c. tom. i. p. 182.

neatness and success. On the upper lid a suture, I apprehend, will be found a very troublesome application; it may be more easily practised upon the under one; but in any case it is apt to excite a considerable degree of irritation. Slips of adhesive plaster will be found to answer equally well, and we run no risk of giving pain by employing them. Besides, as less force is exerted, than when the sutures are used, we are better able to judge, whether the single effect of the excision of the skin will be sufficient for the cure of the complaint. If it should not, the application of some caustic substance during the cure, will tend to enlarge the wound and aid in producing a cicatrix.

Hitherto we have supposed, however, that although the eye-lid has been inverted by the contraction which the healing of ulcers on the internal surface of the lid had produced, yet that it was possible to give the tarsus a direction outwards, without affecting its integrity. But it sometimes happens, when the ulceration has been considerable, that the size of the tarsus is greatly diminished by the general contraction, in such a manner that no external cicatrix can overcome the

tendency in the eye-lid to turn inwards. The best mode of remedying this inconvenience is to divide the tarsus in the middle with a bistoury, or even with a common lancet. The extent of the incision must be regulated by the degree of contraction. When the division of the cartilage has been effected, the parts recede, and the complaint is removed; and if during the cure there should be manifested a disposition to coalesce, this should be prevented by the use of some escharotic. The solution of the sulphate of copper already recommended, may be here conveniently applied with a hair pencil.

When the hairs of the cilia alone are turned towards the ball of the eye, without any change in the direction of the tarsus, the cure is attended with very considerable difficulty, and on some occasions it is almost impossible, without performing the operation, just mentioned, to overcome this morbid disposition. Some have recommended to cut them as they grow, and if this were duly attended to, it would perhaps be as simple and effectual a palliative mode as any. Others insist that they should be extracted by the roots. But while this latter method does not ensure the patient against

their future growth, the operation of extraction is attended with very considerable pain, and sometimes produces high degrees of inflammation. As neither of these methods have been found successful, it has been suggested to fold back upon the tarsus the wrong directed hairs, and retain them in that situation, by small slips of adhesive plaster, or to glue them down by strong mucilage, applied by means of a hair pencil. This latter method, I apprehend, will be found upon trial to be more successful in speculation than in practice.

As the three last mentioned modes of changing the direction of the hairs are merely palliative, either may be practised, according to the nature of the case and the feelings of the patient; but if they fail, recourse should be had to excision of the skin, as the most effectual way of producing a permanent change of direction.

SECTION III.

TREATMENT OF THE CONSEQUENCES OF OPHTHALMIA.

The treatment of the consequences of Ophthalmia still remains to be considered. I shall take them in the order in which they occur in the history.

Encanthis.

At the commencement of this affection, a leech or two may be applied, as near to the seat of the enlargement as possible, and afterwards the discutient collyria should be frequently employed. If its size should not be found to be sensibly diminished by these means, and while it still remains indolent, extirpation is the best remedy. This may be easily accomplished in the following manner:—Directing an assistant to fix the head and to separate the eye-lids, the surgeon should elevate the excrescence with a hook or forceps, while with a small scalpel he dissects it carefully from its attachments. Astringent solutions of the acetite of alumina, or of the sulphate of zinc, will restrain the bleeding, and if duly persisted in, may prevent

the regeneration of the tumour. Indeed, if its roots have been completely removed, this seldom takes place.

When the encanthis has been neglected or ill managed, it frequently becomes of considerable size, and puts on a cancerous appearance. Although the difficulty be increased, the extirpation of the tumour is then indispensably necessary, least by its continuance other parts of the eye should be also involved. The operation, however, should be deferred until the inflammatory symptoms have subsided. In removing this excrescence, when in this malignant state, less delicacy need be observed with respect to the contiguous parts, and every diseased portion of membrane should be carefully taken away. To ensure success, and to destroy any tendency to reproduction, the parts should be touched with the nitrate of silver; but the operator should be particularly careful to confine the escharotic to such only as he deems actually diseased.

Pterygium.

Like Encanthis, this membranous production is seldom discussed, and indeed its formation very

often takes place during the employment of the most discutient collyria; as every successive attack of inflammation renders it worse, its removal becomes absolutely necessary. It would be imprudent to attempt this, during the presence of inflammation, and we should therefore wait until it has subsided.

The excision may be easily accomplished by a pair of scissars slightly curved at the points. Having directed an assistant to fix the eye, and to separate the eye-lids, the operator should raise up the pterygium with a forceps, so as to have a correct idea of its extent, and of the nature of its adhesions, and he should commence the incision at its apex, where it adheres to the cornea. By this mode of proceeding, he will be able to detach it more completely from the cornea, than if he had begun on the white of the eye, as the bleeding would obscure his view, and otherwise interrupt him during the operation. Raising it up with the forceps as he proceeds, the separation is in general affected without much difficulty.

Many prefer a knife and a hook to the scissars and forceps, but I think the operation is perform-

ed with more ease and certainty with the latter instruments. After the operation, the milder kinds of astringent collyria should be applied to the eye, such as a solution of the acetite of zinc, lukewarm. If in the course of a day or two, there be no tendency to inflammation, some stronger collyrium, may be employed, as a solution of the sulphate of zinc.

In removing a pterygium, it is the practice with some to take it away piece-meal. But this is a mistaken mode of proceeding, as it subjects the patient to unnecessary pain, and by the irritation which these successive operations excite, the morbid tendency in the vessels to become varicose is increased. Whatever can be removed should be removed at once, and if there should be a regeneration of the membrane, a repetition of the operation becomes necessary.

This operation is more likely to be successful in the case where the pterygium has been the consequence of a smart attack of Ophthalmia, provided that such attack has been cured, than when it succeeds to a long continued chronic inflammation from a scrophulous taint in

the system. In the former instance, it is possible to overcome the disposition to effusion, in the latter case the disposition is inherent in the constitution. But in almost every instance, the removal of the petrygium has one good effect; the cicatrix formed on the cornea prevents any similar future production from extending in the same direction, and according to the observation of the learned Scarpa, in every instance where a complete cure has been performed, the opacity of the cornea has been always sensibly diminished by this mode of treatment.

Ulceration of the Cornea.

Different views have been entertained respecting the management of ulcers on the Cornea. Some have treated them with the same circumspection, as is observed in the case of ulcers on other parts of the body; and others have recommended powerful escharotics to destroy at once the morbid action which produces them. Neither of these modes is correct, without some limitation.

When an ulcer occurs on the cornea, in consequence of acute inflammation, if the parts in the

neighbourhood exhibit marks of increased action, it would be imprudent to apply to them a stimulating application, for if the escharotic failed to destroying this morbid action, it would in all probability increase the irritation, and consequently accelerate the suppurative process.

Most commonly, however, when ulceration takes place on the cornea, although the first stage of it is inflammatory, and is attended with acute pain; yet, when apparently matured, these tumours shew little disposition to burst, and it is generally in consequence of some new attack of inflammation, that this latter effect takes place. The matter discharged is acrid and abundant, and the pain pungent and acute.

When matters are in this state, the indications of cure appear to be to lessen the sensibility of the part, and to destroy the morbid action which maintains it. With this view, the nitrate of silver should be applied to the centre and edges of the ulcer.—In the course of three or four days the eschar falls off, and if the caustic has not been able to penetrate sufficiently deep, the former symptoms recur. In this case it is necessary to renew the escharotic

applications which should be repeated until granulations appear. When this disposition is manifested, every irritating application should be avoided, and little more is necessary than to keep the eye clean by means of luke-warm milk and water.—If the granulations should be too exuberant, they may be repressed by a solution of the sulphate of copper in the proportion of twelve grains of the salt to an ounce of water, applied with a hair pencil.

It sometimes happens that either from the malignant nature of the ulcer, or from the operation of the escharotic, that the cornea becomes perforated so as to permit the escape of the humours of the eye, and the protrusion of the iris. From the comparatively gradual manner in which this latter has been protruded, it is not in this case liable to be so forcibly strangulated, as when suddenly displaced in consequence of a wound in the cornea; and therefore we need be less anxious about its immediate return. If, however, it becomes painful, assumes a cancerous appearance, and shews no disposition to return, the nitrate of silver should be applied to it also.

Although ulceration of the cornea be a consequence of Ophthalmia, yet it frequently in its turn, becomes a cause of a new inflammation, especially when it has been of long standing. Hence, while we attend to the healing of the ulcers, we must not neglect to employ means for the removal of the Ophthalmia.

Opacity of the Cornea.

As an Opacity of the Cornea may be induced by a variety of causes, it becomes necessary, previously to making any application, to ascertain the nature of the particular one which may have operated in the instance under observation.

From the ingenious views of this subject given by Dr Barclay, it appears that an increase even of a few drops in the quantity of the aqueous humour by distending the cornea, renders it opaque. This, it appears, may be occasioned by achange in the position of the head, or by an inflammatory diathesis in the system. When it depends upon a determination to the head, evacuations both general and topical are necessary, such as venesection, saline purges, and the application of leeches to the temples. The

seventh case of Ophthalmia related by Mr Ware, appears to have been accompanied by an appearance of this kind, and to have depended on an inflammatory disposition in the system.

It is possible, however, that on some occasions the increase in the quantity of the aqueous humour may be the result of undue exhalation, the effect of a weaker action than natural of the vessels. Indeed I am disposed to think that this latter is a more frequent cause of opacity than is generally believed. Thus I have sometimes known a dimness, or what is called a weakness of sight, removed by a slight attack of Ophthalmia.——In Mr Ware's eleventh case of Ophthalmia, entitled, "Peculiar Opacity of the Cornea, consequent on an Ophthalmy which commenced whilst under the use of Mercurial Medicines," the opacity appears to have been the result of extreme debility of the exhalent vessels of the cornea. On examining the eyes, Mr Ware observed the cornea of both "to be universally clouded with a dewy moisture, which seemed to transude through its pores *." Different astringent solutions were ap-

* Chirurgical Observations, &c. p. 172.

plied with little effect, but the complaint was at last removed by the daily application to the eye of a powder composed of one part of alum and nine parts of fine sugar. This seems to have been a more permanent stimulus than the solutions.

When the opacity is produced by a morbid dilatation of the veins which ramify upon the conjunctiva, and external lamina of the cornea, powerful astringent and stimulating collyria should be employed, with the view of restoring to the vessels their lost tone. If, however, they shall be found unable to accomplish this, the cluster of varicose veins maintaining the morbid action should be removed. This may be done, by elevating with a hook the portion of membrane including the vessels, and cutting it off with a pair of scissars.—— The daily use of a little of the unguentum nitratis hydrargyri rubri, for some time after the operation, eminently conduces to the discussion of the opaque spot.

I have mentioned in the history of the causes of opacity, that besides being produced by a varicose state of the superficial veins, it was sometimes occasioned by a local increase in the action of the

vessels seated deep in the substance of the conjunctiva and sclerotic. When this is the case it is in vain to attempt, by almost any application, to interrupt the morbid disposition in the vessels, the only cure is to destroy their continuity: Mr Ware mentions a striking instance of this kind, where after having, in the usual manner with the scissars, removed a portion of the superficial vessels; he perceived one which lay deeper than the rest, and which penetrated the substance of the sclerotic." This vessel he divided transversely with the point of a lancet; and a copious hemorrhage ensued. The good effects of the operation were immediately perceived by the patient, who at once distinguished objects much more distinctly than she had been able to do for a considerable time before *."

The most troublesome species of opacity denominated *albugo* or *leucoma*, is where effusion has taken place between the laminæ of the cornea, in consequence of previous violent action, but which action has subsided, and the effused fluid exists as a detatched insulated mass.——In this case we must trust almost exclusively to stimulating appli-

* Chirurgical Observations, &c. p. 76.

cations. Of these, the different collyria already recommended are among the best, and when the affection is recent, I have repeatedly experienced their utility. But if the organization of the cornea is affected, they are seldom productive of any beneficial effects.

It is in cases where the opacity is produced by extravasation of lymph, that the different kinds of powders are most useful. The combination of alum and sugar operates both chemically and mechanically, and is certainly more useful than when applied in a state of solution. In the solid form, it is more permanent in its operation, and by the friction which it excites, not only stimulates the absorbents, but appears on some occasions to render the effused matter more susceptible of being removed.

But very considerable mischief has arisen from the indiscriminate use of powders of different properties. There can be no necessity whatever for applying an escharotic powder to the whole eye, with the view of removing a spec on one portion of the cornea; for while the sound parts are subjected to unnecessary irritation, the remedy is but

partially applied to the seat of the complaint.—Hence, when at the spot where the opacity exists, there are no marks of inflammation, nor any sensible inequality on the surface of the cornea, the aluminous powder recommended by Mr Ware will be found a useful application. If, however, the spec appear prominent and circumscribed, its removal should be attempted by the application of an escharotic. The nitrate of silver, or the sulphate of copper, may be employed according to circumstances; but their operation should be limited as much as possible to the spot where the opacity exists.

Hypopion.

Hypopion is always an unfavourable termination of Ophthalmia, and although small collections of puriform matter diffused through the aqueous humours have been absorbed, yet such an event cannot with confidence be expected always to occur. From the turbid appearance which the eye exhibits, and from the general belief, that whenever purulent matter is discharged the acute stage of inflammation is passed, it has seldom been the practice to persist sufficiently long in cases of this

kind in the use of antiphlogistic remedies. But from what was observed, when stating the history of this termination of Ophthalmia, it appears that, on many occasions, the effusion is slow and gradual, and generally accompanied with an inflammatory action of the vessels.

Other circumstances, therefore, besides the appearance of the parts must be taken into consideration, in determining the plan of treatment, and particularly the state of the patient's feelings. If he complains of an acute burning pain in the ball of the eye, headach, and great intolerance of light, we may presume that the inflammation has not yet subsided, and that remedies, which tend to check its progress, may still be useful. With this view, blood-letting, both general and topical, cooling purgatives, and mild collyria used lukewarm, should be employed, according to the urgency of the case.

When, on the other hand, the pain has ceased altogether, and the aqueous humour appears turbid; when light, so far from being intolerable to the eye, appears to have hardly any effect upon it, we may pretty confidently assert that the inflammatory stage is passed, and to persist longer in the use of debilitating remedies, would augment the

tendency to effusion. Gently stimulating collyria in a tepid state should then be employed, and occasionally a few drops of the tincture of opium; blisters should be applied to the temples, and the patient should take from time to time some purgative medicine. By the use of these remedies, carefully administered and duly persisted in, the glutinous matter diffused through the aqueous humour, is gradually absorbed and the cornea regains its wonted lustre.

When, however, the stage of acute inflammation has been unusually severe and protracted; when instead of appearing streaked with opaque lines, the whole aqueous humour becomes turbid from the evident admixture of puriform matter with it; when the patient complains of acute pain in the ball of the eye, and a sense of fulness as if it were like to burst, and when headach and symptoms of general fever are present, it then becomes necessary to puncture the cornea, so as to give an outlet to the matter accumulated in the eye.

If, under these circumstances, this operation be delayed, the cornea frequently bursts of itself, and disagreeable ulcers are formed. But as the inci-

sion of the cornea must always be deemed a formidable operation, it should not be prematurely performed. In ordinary cases, instead of anticipating the formation of an ulcer, we actually create one by it, and interrupt the process of absorption. But when the urgent symptoms just stated are present, it should be performed without delay, and, as Mr Ware observes, the incision of the cornea should be the same as is practised in the extraction of the cataract.

Staphyloma.

From the definition of this morbid state of the eye, it appears that as far as the recovery of sight is concerned, art is unavailing; and we should therefore limit its objects to circumscribe the size of the tumour.

To attain this end, different plans have been suggested. Richter proposes to form an artificial ulcer at the bottom of the tumour on the cornea, not only with the view of diminishing the tendency to enlargement, but in recent cases to restore the transparency of the cornea *. The idea is ingeni-

* Observ. Chirurg. fascic. ii. p. 123.

ous, but it has been opposed by Scarpa, whose extensive experience and acute penetration justly entitle his opinions to respectful attention. He directs a circular or oval piece of the cornea to be removed from the top of the tumour, of a size proportioned to the magnitude of the Staphyloma. A portion of the iris is generally included in this excision, and the crystalline lens and its capsule are soon after discharged at the opening. By this evacuation the globe of the eye sinks so much, as often to enable the eye-lids to cover it. Suppuration takes place, granulation ensues, and the size of the ball of the eye is in most instances permanently diminished *.

It is true, we cannot by this operation remove from the patient the blank which nature has presented before him, but we can more easily conceal the deformity which it occasions by the substitution of an artificial eye.

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* Traité Pratique, &c. tom. ii. p.p. 198, 199.

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